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12 April 1984

USSR Report

TRANSPORTATION

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PORTS AND TRANSSHIPMENT CENTERS

MOTOR VEHICLES AND HIGHWAYS

PLANNED FEATURES OF NEW VAZ-2108 ZHIGULI

Moscow ZA RULEM in Russian No 1, Jan 84 p 5

[Article by N. Letchford, deputy general director of the Volga Motor Vehicle Plant: "A New Generation of Zhigulis"]

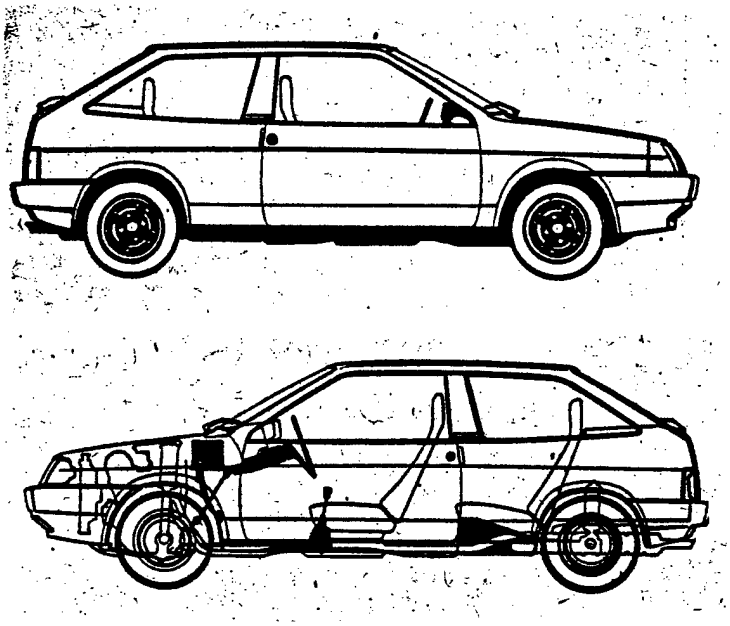
[Text] Any new passenger car arouses keen interest among drivers even before production is begun. Brief reports in the press, persons appearing for a moment on the television screen, and simply conversations with "experts," naturally, arouse curiosity and demand for reliable information. And this is understandable: persons who have linked their lives with a vehicle want to know what the plants are preparing for tomorrow and the day after tomorrow, so to speak.

And the VAZ-2108--as the future model of the Volga Motor Vehicle Plant is called--is no exception. Let us speak about it briefly, having stipulated at once that today we will provide readers with information which can be given before the vehicle is produced in series, and a more detailed discussion lies ahead.

Minister of the Automotive Industry V. N. Polyakov spoke officially about preparation of the new model for production in Togliatti in his speech at the 26th CPSU Congress in February 1981. He reported that a vehicle with front-wheel drive would be built at the Volga Motor Vehicle Plant in the 11th Five-Year Plan. It may be added that the technical assignment for the new family of vehicles represented by the VAZ-2108 was confirmed as long ago as the beginning of 1978. It envisaged the development of an entirely new vehicle, not linked by continuity of construction and technology with the Zhigulis being turned out at present. The VAZ-2108 will become the basic model in the new generation of models of the Volga Motor Vehicle Plant and will incorporate modern technological solutions.

The engine, which is joined with the transmission in a compact assembly, is situated in a transverse position and drives the front, not the rear, wheels. The body of this 5-passenger vehicle has three doors and not three interior areas as the current Zhigulis have; it has two interior areas, that is, it has no projecting trunk but a hatchback door which slopes in the rear. The VAZ-2108 is a little shorter than the VAZ-21011.

The front-wheel drive configuration has made it possible to make the vehicle more compact and lighter than the well-known VAZ models, with the same interior space and level of comfort. In particular, it is 50-60 kilograms lighter than the VAZ-21011.



The VAZ-2108 is equipped with a completely new, modern engine which is even more economical and durable than its predecessors. It is planned to turn it out in three basic versions according to displacement: 1,200, 1,300 and 1,500 cubic centimeters. In general, the vehicle will be in the same class as the VAZ-2101, VAZ-21011 and VAZ-2103.

The basic mechanical features of the new model are: a serrated belt as the camshaft drive, a 5-speed transmission, rack-and-pinion steering, vacuum-assisted brakes, as well as radial tires and 4-wheel independent suspension appropriate for them, headlights which are automatically adjusted according to vehicle load, and electronic contactless ignition.

Plastic parts, weighing a total of about 80 kilograms, will be widely used in the vehicle (by comparison, they weigh 39 kilograms in the VAZ-2101), and body parts most susceptible to corrosion will be made of "tsinkrometall," steel sheet with improved rust resistance.

Production of the first industrial batch of the VAZ-2108 (about 4,000 units) is planned for the end of 1984, and in the next year of the 11th Five-Year Plan mass production of the new model will begin.

A great deal of work lies behind the words "mass production." And not only for the entire collective of the AvtoVAZ Association. The country has earmarked considerable capital to prepare for production of the new family of Zhigulis, including for the purchase of imported equipment and accessories (for example, robots from Kawasaki-(Unimate)), licenses for individual manufacturing processes and the design of assemblies and certain materials. In order to accelerate completion of the vehicle with front-wheel drive, which is new to us, we began collaboration with the Porsche firm (FRG). At the same time, it must be emphasized that the new vehicle has been created completely by Soviet designers, but technical assistance from the Porsche specialists, who possess considerable experience, was called for to save time.

We mentioned the imported equipment and technology. But it should also be kept in mind here that on the whole, preparation for production of the new model is being supported primarily by the capabilities of domestic industry: machine tool building, metallurgy, electronics, chemistry. Complete-set items and materials for the VAZ-2108 should be provided by several hundred enterprises in our country.

A great deal is being made directly by the collective of the Volga Motor Vehicle Plant, including automatic lines, specialized digitally programmed machine tools, robots, and large stamping units for making the body parts. In just the last year, the Volga Motor Vehicle Plant manufactured with its own resources 430 units of equipment valued at over 20 million rubles, as well as 210 large stamping units, not to mention the construction of new facilities and shops. Preparation for production of the VAZ-2108 is considered at the plant as the most important and crucial task for the entire collective and its party organization. The work is complicated, however, by the fact that the union ministries of the chemical industry, the petrochemical industry, and the fertilizer production industry and their enterprises are not coping satisfactorily with targets to provide production of the new model with chemical materials and a number of complete-set items, and this situation is extremely disturbing.

In 1985, when mass production of the new-generation vehicle will begin, they will begin coming off one of three assembly lines [nitki konveyera]--the one on which assembly of the VAZ-2101 was begun at one time. The second assembly line will be returned for the VAZ-2105 and VAZ-2107, recently put into production, and the third line will be retained for assembly of the VAZ-2103 and VAZ-2106. Production of the VAZ-2121 will be continued at independent production facilities.

But for now, we have manufactured over 150 test models of the new vehicle by the end of 1983. They underwent thorough testing, and a finished, complete design already exists at this time.

8936
CSO: 1829/195

RAILWAYS MINISTER ON CEMA RAIL NETWORK, HANDLING OF GAGE DIFFERENCES

Moscow IZVESTIYA in Russian 13 Dec 83 p 5

[Article by V. Zakhar'ko, IZVESTIYA correspondent: "Trains Across the Borders"]

> [Text] The echo from the whistle of the first electric locomotive that recently pulled into Brest reverberated in three capitals simultaneously--Moscow, Warsaw and Berlin. The signal heralded the completion of the elctrification of the entire line from Moscow to the border, a component part of the international trunk line that runs across the territories of the USSR, the PPR and the GDR.
>
> The problems being jointly resolved by the railwaymen of the European members of CEMA are recounted below to our correspondent by the USSR Minister of Railways N.S. Konarev.

[Question] Nikolai Semenovich, above all we would like to hear your views on the statistical data that point to a drop in the railways' share of freight turnover among CEMA countries.

[Answer] There was a time when foreign trade was serviced only by trains, ocean-going and river vessels. Nowadays goods cross borders by asphalt highway, by air and undergraound. Pipeline transport of raw materials, as the most economical, is developing at an accelerated rate: It now accounts for almost one third of the entire volume of international shipments among the CEMA countries. It is, therefore, natural that the share of the railways in the overall system of transport services now stands at roughly 40 percent. This, however, does not mean that the trains are hauling less freight. The rapid rise of production in the countries of the socialist commonwealth and their deepening integration are constantly imposing an increased burden on all forms of transport. The railways continue to play an exclusive role in the interaction and cooperation of our national economies. Last year, for example,

Soviet railway stations located at the frontiers of the European countries of CEMA handled almost 85 million tons of freight in both directions. This year's plan foresees a further rise in export-import shipments.

[Question] It's easy for the driver at the border--all he has to do is start the engine, and his truck is rolling on the asphalt of another country. That is something the locomotive engineer cannot do--our railway gage and that of our neighbors are not identical. There are letters in IZVESTIYA's mail that ask if there are any prospects for converting the entire CEMA rail network to a unified track width.

[Answer] That is utterly out of the question, even if for purely economic reasons. Soviet railways have a wider gage, and their total length is colossal--143 thousand kilometers. If we decided to, say, narrow it, the problem would not boil down to merely moving the rails. We would have to fundamentally revamp the entire extremely complex railway system with its gigantic locomotive and car fleets. For analogous reasons neither can the European CEMA countries broaden their rail tracks: the railways to the west of their borders have the same gage as they do.

Of course, to have the same gage everywhere would be ideal, but such is the network that developed historically in Europe and there is basically nothing you can do to change it. The gage difference is a mere 85 millimeters, but the difficulties it causes are legion. To surmount these dificulties the CEMA countries are concentrating their scientific, technological and organizational efforts on the basis of bilateral and multilateral agreements.

[Question] But passengers don't much feel the difference between track widths. They travel all the way to Warsaw and Berlin, Budapest and Sofia in the same cars they boarded in, say, Moscow.

[Answer] Thanks to cooperation with our foreign friends, in recent years there has been a reduction in passenger train stopover time at frontier transition points. While passengers stroll and get some exercise special mechanisms hoist the cars from one gage to another. I must point out that passenger trains get the green light before all other traffic. The fact that their routes are precisely defined tends to simplify matters.

With freight trains everything is much more complicated. In the first place, there are so many of them. In the second--there are goods aboard a train or even a single car destined for consignees in different cities, sometimes even different states. Thirdly, all countries keep strict track of every one of their cars, it is badly needed in the national economy. I could continue: fourthly, fifthly, tenthly... As you see, there is a host of reasons why freight from cars of one gage has to be transferred at the border to cars of the other gage. And this freight, as I mentioned earlier, is measured in the scores of millions of tons.

In short, that 85 millimeter gap which passengers hardly notice is a very big burden indeed on the national economy.

[Question] The economy of one specific country? Or on both sides of the border?

[Answer] In the simplest terms, the flowchart reads as follows: when we receive goods from across the border we transfer them, on our territory, to wide-gage cars that then haul them into the Soviet hinterland. Our partners carry out the same operation with cargoes that arrive from the USSR.

The national economy of each CEMA country has a vested interest in accelerating rail shipments. The collectives of border stations work tirelessly round the clock, but car downtime and freight delays are still all too common. Much is being done to increase the traffic-handling capacity of these stations. They are being modernized, expanded, their transloading facilities developed. New hoisting equipment and automated control systems are coming onstream. Nevertheless, the situation is not improving as fast as we would like. The pressure on the border stations should be eased by a fuller and timely implementation of all the technical and economic measures agreed on by the CEMA countries in the process of coordinating their national economic plans. One of the reasons for the massive accumulation of goods at the border is that they are not shipped out on schedule by their manufacturers. The wider use of containers, packets and pallets could prove very effective too. There must be a significant improvement in freight stowage so that individual cars or whole trains could proceed to their ultimate destinations--Budapest, Leipzig, Moscow, Leningrad or whatever, without an undue number of stops or transshipments.

[Question] Are there any lines where transloading has been eliminated?

[Answer] Yes, there are--the so-called wide-gage connectors. One is the trunk line by which iron ore from the Soviet Union is delivered to the Katowice Metallurgical Combine, it extends into Poland to a depth of 400 kilometers. Similar lines to the metallurgical combines of Galatz (Rumania) and Kosice (Czechoslovakia) are functioning smoothly too. By agreement between the governments of the USSR and CSSR a new railroad transition point is currently going up at the border in the vicinity of UZhgorod, but the gage will be narrower than the Soviet standard. A major junction is being built here which will greatly facilitate transpotation links between the two countries.

[Question] Are any new connector lines of one or the other gage planned?

[Answer] For the time being, no.

[Question] Let us move back from the border to its near and distant approaches. What is being done on Soviet lines to speed up shipments of export and import cargoes?

[Answer] Since our conversation was prompted by the arrival of the first electric locomotive in Brest, I will begin with electrification, which, for that matter, is one of our main concerns for the entire country. Since the start of the five-year plan, and only in sectors gravitating toward the western borders of the USSR, over 400 kilometers of line have been put on electric traction. About 700 kilometers were equipped with automatic block signaling and a centralized control system, 70 kilometers of second track were laid and on 650 kilometers of track the length of seamless or "velvet" stretches was increased. These and other measures enabled the speed of passenger trains to be stepped up to 120 kilometers per hour, of freight trains--to 90 kilometers, on such important lines as Moscow-Brest, Krivoy Rog-L'vov-Chop, kiev-Ungeny.

All CEMA countries are taking measures to develop the technical base of their railroads. Locomotive and car fleets are being expanded or replaced. Ever wider use is being made of electronic computers. In all, there is no sphere of activity where our cooperation does not lead to the intensification of transport operations, both within the borders of one country and in the socialist commonwealth as a whole.

One measure that promises to greatly improve the precision and rhythmicity of shipments is a unified automatic rolling-stock coupling created for the gage in use to the west of the USSR. An additional positive feature about its design is that it can be quickly joined to the automatic coupling installed on Soviet railroad cars. Most of the technical, operational, financial and legal aspects of the matter have already been agreed upon, but the focal problem--on when and how to make the transition to the new coupling--remains an open question. In our opinion, the tempo of this important invention's assimilation could well be higher.

[Question] On the railroads of Europe one often sees cars bearing the insignia OPW. These cars are the property of the socialist countries' common car fleet established in December 1963. What are its main achievements in the twenty years of its existence?

[Answer] Prior to the organization of the OPW the established procedure was to return each car to the country of origin as soon as it was unloaded. This resulted in quite a few empty cars coursing the national railroads. All seven European members of CEMA took part in the creation of the common car pool, and all profited from it. Over the years it has grown threefold and now numbers 300,000 cars. These are used to haul freight between the contracting parties, on internal trips and to and from the countries of Western Europe. Currently being drafted are new rules of operation for the pool that will increase the incentives for each country to reduce the number of idle runs. The Soviet side thinks the OPW should be supplied with more new cars; older cars now technically and economically obsolete should be withdrawn from its ranks.

[Question] The new CEMA agreement on the common use of containers has been in effect for five years now. How successfully is it being implemented?

[Answer] The underlying principles of the agreement bring many advantages to each participating country. Compared to 1978, the volume of container shipments has increased 2.5 times. Last year the USSR sent out 87,000 and took in over 104,000 containers. We managed to curtail sharply the empty run--in the CEMA countries it does not exceed 15 percent of the container's full turnover time. This is an important indicator, and ours is twice as good as that achieved by the railroads of Western Europe. But even there there are problems that have to be jointly examined and jointly resolved to the satisfaction of all sides. The principle of mutual advantage has come to play an increasing role in our cooperation on railroad transport.

[Question] In this connection I have a question about transportation costs. As is known, the extraction of minerals and the production of many export commodities in our country are relocating further and further east and north. Twenty years ago the average trip distance to the western frontier of the USSR measured 200-3000 kilometers, today that figure has increased to 3000-4000 kilometers. Understandably, this has led to a significant rise in transportation costs. Are these in any way reflected in the payments CEMA countries make for our exports?

[Answer] There is a rule which stipulates that the cost of transportation over the exporter's territory is borne by the exporter himself. However, it does not always comply with the principle of mutual benefit, a fact recognized by the whole socialist world. It is a complex and multifaceted problem that lies in the mainstream of the major tasks facing us. To cope successfully with them, planning and foreign-trade organs will have to take into account the changes occurring in the development and consolidation of CEMA economic integration.

Many factors exert an influence on the character of international trade in raw materials and manufactured goods, on the structure and scope of transport operations. Among the most important is the cost of transportation. That is why all CEMA countries stand to gain from improvements in the transportation links between them.

A reliable basis for good business relations is the long-range (to 1990) program of cooperation in the field of transport in which national interests are closely tied to the requirements and capabilities of socialist economic integration.

12258
CSO: 1829/184

DEPUTY CHIEF ON CAR REPAIR INITIATIVE PROGRESS ON MOSCOW RAILROAD

Moscow GUDOK in Russian 6 Mar 84 p 1

[Article by Ye. Sorokin, deputy railway chief: "Developing Initiative"]

[Text] A little more than a year has passed since the CPSU's MGK [International Convention on the Conveyance of Goods by Rail] BURO and then our party's central committee approved the initiative of the capital's outstanding industrial, construction and transport enterprises aimed at improving the condition of railway cars and containers.

Then a total of 11 collectives joined the initiators. Now, in Moscow alone, more than 400 enterprises are normalizing rolling stock and another 144 are repairing containers.

In all, about 2,000 enterprises have concluded agreements with the Moscow railway for repair of railway cars and containers. The initiative was seized in Orlovskiy, Bryansk and Kaluga oblasts. It is important not only that there were more empty trains. Railway car repair forced the clientele to handle them more carefully.

In a year about 140,000 railway cars and containers were renovated at industrial enterprises serving the main line. This is more than a year's loading for the Moscow-Yaroslav department.

Of course, this result was not easy to achieve. This required much organized educational work and a new technique of repairing rolling stock.

Special commissions were formed in the main line directorate and in the departments in order to disseminate experience. They analyze the state of affairs, conduct inspections of industrial enterprises and railway depots, offer them help and regularly conduct joint seminars of railway and belt-line workers. As a result, we always know what our clients' problems are and try to help them eliminate them. For their part, railway workers discuss new methods of normalizing rolling stock and suggest how better to organize matters.

Practice has shown that not every collective can fully repair a railway car independently. For instance, somewhere it may be possible to repair the

casing, but there is no welder to weld on the separated part. Then the question of cooperation of some organizations was put on the daily agenda.

New engineering processes were developed jointly with belt-line workers at the Kanatchikov, Rostokin and other railway stations with such enterprises. They clearly defined the interrelationships of all sides; who got what and in what sequence, and where to send which rolling stock.

Moreover, a number of enterprises set up production of spare parts from the remains of basic production, whereby each makes a specific part not only for itself but for others. The material and technical supply staff buys and distributes these spare parts.

Now, for example, agreements have been concluded with the Frezer [Milling Tool] Plant and Automobile-Tractor Electric Equipment Plant No 1 for the production of rollers, yokes, pins and grips for container locking structures. The ZIL and Dynamo plants have begun producing cams and yokes for containers. The Krasnyy Bogatyr', Krasnopresnenskiy and Tushinskiy ZhBK [reinforced-concrete structural parts plants] produce railway-car parts.

The transport shops of industrial enterprises are being further developed with regard to repair of rolling stock. For instance, there is already a railway-car repair machine and lift-transport equipment has been set up at the Automobile Plant imeni Likhachev. In the next year and a half, an assembly shop with all the necessary technological equipment will be built. A depot will be built at Reinforced-Concrete Structural Parts Plant No 9.

Regarding the initiative of industrial enterprises as a great help to transport, the railway workers are developing their own technical base. They are now completing reconstruction of railway-car repair points at the Boynya, Yuznyy Port and Likhobory stations. Last year a shop for standardizing large-capacity containers was installed and put on line at Kuntsevo-2. The majority of railway depots repair rolling stock by the flow-conveyor method. In the future, 13 new maintenance points, 3 for container repair, will be organized on the railway. It is planned to increase the amount of shift work in a number of places. All railway departments have been assigned more tasks for normalizing roofed, doorless platforms and those with defective floors.

The main task of the Moscow collective is to eliminate instances of loading into defective railway cars and containers and transmitting them in this state to other railways. At the same time, our neighbors should not allow defective cars to be sent to us. Only by combined efforts can we bring the railway network's rolling stock to the proper state and meet the demand of the national economy for freight transports.

12421
CSO: 1829/202

DETAILS OF KHARKOV METRO CONSTRUCTION PROGRESS

Moscow GUDOK in Russian 14 Dec 83 p 4

[Article by B. Bukharina from Kharkov: "The Laser Corrects"]

[Text] The "Saltov Radial Line" is the name given to the second stage of the Kharkov Subway. This is now being built by the metro builders. The new metro line will connect the northeastern suburbs of the city, the Saltov District, with the center and with the old densely populated Nagornyy Rayon. Already more than 4,000 people live in Saltov and the inhabitants are impatiently waiting for the completion of the new line.

This section of the route is one of the most complicated. Here the tunnels have been laid under a busy highway and subway tracks and during this time on the surface urban transport traffic has not been halted for a single day. Precisely on this stretch, between Kievskaya and Barabasheva Stations, the subway builders met with a water obstacle, the small Kharkov River.

...The streetcar turns into a busy intersection and from the window one can see the top of a gallery which from a distance is reminiscent of the bellows of an extended accordion. This is a metro bridge about a kilometer long which crosses the stream. It was erected by specialists from the Bridge Detachment No 27 while the metro builders laid the steel track and installed the gallery of metal arches and extrusion plates. The gallery has been insulated so that the trains and the track are not exposed to the effect of temperature differences.

The river, of course, greatly complicated the work of the metro builders. Even on the way to it the tunnels had been built literally in the water. Incidentally, the ground here presented surprises along the entire route. Kharkov stands on quicksand and for this reason water here has been the chief enemy of the underground construction workers. However, they have learned to combat it, in successfully employing water lowering, a drainage system, freezing, chemical reinforcing and other modern methods for combating waterlogged ground.

The new line starts in the center of the city at the Istoricheskiy muzey station. Finishing workers are busy beneath the arches of the underground hall clothing, the walls and columns in granite and marble.

"We still are living through the events of those days when we were installing the station's structural elements," said the brigade leader of the drilling workers M. Lalazarov. "We have lived through several difficult, unforgettable years on this project."

One can understand the brigade leader. The Istoricheskiy muzey was the first deep-built column station in Kharkov and the first column station of such a design under similar hydrogeological conditions in the nation.

"We built it next to the operating Sovetskaya Metro Station," continued M. Lalazarov, "and the proximity of the passing underground expresses always necessitated particular precision and maximum carefulness. Here the ground is complex and the waterlogged sands surrender the water very poorly."

The Kharkov workers adapted the experience of the Moscow builders of the Aviamotornaya Metro Station, where the drilling conditions were approximately the same. Using the Moscow experience, the Kharkov workers worked out their own method for installing the columns. Precisely here, at the Istoricheskiy muzey Station, a laser beam was employed for the first time. This was a contribution by the best innovator of Khar'kovmetrostroy [Kharkov Metro Construction Administration], F. Voronoy.

Filipp Alekseyevich [Voronoy] willingly demonstrated his laser units.

"I have several of them. This one is a special one for installing the platform and by using that one we can lay the granite slabs. A laser also helped us install the escalators. In a word, the laser has gained permanent admittance to Kharkov metro construction."

F. Voronoy switched on a unit and the beam, in crossing the hall, produced a mark on the opposite wall.

"With this unit," explained the underground navigator, "I made all the surveying marks on the arch of the vestibule in an hour."

On the Central Square imeni Dzerzhinskiy the entrances to one of the new stations have already been completed. In descending the granite steps into the underground room, it seems as if you have entered a shining palace.

The Dzerzhinskaya Station is double-tiered and unique in its design. The tall round columns have been clothed in white marble. Above the track tunnels is a second tier with balconies also faced in white marble. On one are the subway service rooms and on the second the passengers can move from one vestibule to another without entering the metro or simply cross under the square. Also original is the arch of the station made from site-cast domes and due to these it seems even higher.

One of the five new stations has been named after Aleksandr Sergeyevich Pushkin. In the city there is Pushkin Street where there will be an exit from the underground hall and a square with a monument to the poet. And now there is the Pushkin Metro Station. It is decorated with conventional pylons. But the design of this metro station also has its particular features as for the first

time the construction workers have built the hall not out of iron tubing but rather out of reinforced prefabricated concrete.

On the new radial line there will also be a single-arch station called Kievskaya. This is the sixth such metro station in Kharkov. Precisely in this city stations of single-arch design have been given a rebirth.

The nearly finished section of the Saltov Radial Line ends with Barabasheva Station. This bears the name of a city resident, the astronomer Barabashev. For this reason, the theme of its design has been devoted to the development of Soviet astronomy. The station is light and spacious. Here the column spacing is 9 m instead of the ordinary 6. They themselves are unique in resembling the letter V. The walls are clad in a light blue metallic enamel which is produced by a Kharkov plant.

Next year, a section of the Saltov Radial Line some 7.4 km of track with five stations will go into operation. The metro builders were to have completed all the work by the end of 1984. But they decided to move up the completion date and turn over the new route on 23 August, the day the city was liberated from the Nazi invaders.

Barabasheva Station will be the end one not for long. Even now the construction workers are working on a second section of the Saltov Radial Line and here they plan to build another three metro stations. On the plans of the Kharkov metro there also is a third line which will cross the city from the southeast to the northwest. Hence in the near future the underground railroads of Kharkov will be more than 50 km long.

10272
CSO: 1829/174

COMPLETION OF BRIDGE FOR SECOND KHARKOV METRO LINE

Moscow STROITEL'NAYA GAZETA in Russian 23 Oct 83 p 3

[Article by B. Bukharina from Kharkov: "A Kharkov Metro Bridge"]

[Text] On the route of the second metro line in Kharkov, installation has been completed on an unique covered gallery, a metro bridge over the Kharkov River which crosses the route between Kievskaya and Barabasheva stations.

Less than a year remains before the second line of the Kharkov metro will receive its passengers. This will connect the northeastern suburbs of the city with the center. The digging of the tunnels has already been basically completed and the structural elements of all five stations are ready. Also finished is one of the liveliest transport crossroads in Kharkov, the Moiseyevskiy Bridge. The tracks of the new Saltov Radial Line have been laid beneath the bridge's mainline and the streetcar tracks. A little farther, beyond the highway, the line under construction comes out on the surface. The tunnels end in front of a small stream which was an obstacle on the path of the metro builders.

When the first stage of the subway was built, such an obstacle would have been crossed by a different method, by laying the tunnels under the river, using a caisson. But this time they decided to follow a less labor-intensive way and build a metro bridge with a covered gallery. The structural elements of the bridge, the length of which together with the crossover sections is around a kilometer, were assembled by specialists from the bridge detachment No 27 while the laying of the track and the installation of the gallery were carried out by the metro builders.

...Externally it resembles the bellows of a giant extended accordion. And only going inside can one see that the gallery has been assembled from separate metal arches to which extrusion plates have been fastened. In order that the trains and the tracks not be exposed to the effect of temperature drops, the plates have been filled with insulation.

The structure which is unusual in metro building practices required unique installation methods. Specialists from the SKTB [Special Design and Engineering Bureau] of Glavtonnel'stroy [Main Administration for Tunnel Construction], with the participation of construction workers, worked out the design of a layer

which was then manufactured by the Kharkov workers themselves. The installation method was as follows: using a trestle and a hoist on the bank they assembled the sections, they transported them to the middle of the bridge and set them in place with the help of the layer.

The Kharkov metro builders should turn over the nearly completed section of the Saltov Radial Line some 7.4 km long at the end of 1984. But they have decided to move up the completion and turn over the new route by 23 August, the day the city was liberated from the Nazi invaders.

10272
CSO: 1829/174

BASIC TECHNICAL TRENDS IN SOVIET METRO SYSTEM DESIGN

Moscow TRANSPORTNOYE STROITEL'STVO in Russian No 10, Oct 83 pp 20-21

[Article by V. A. Alikhashkin, chief engineer of Metrogiprotrans: "Technical Trends in Designing Subways"]

[Text] As the leading organization in the area of researching and designing subways, the State Metrogiprotrans Order of the Labor Red Banner Design and Research Institute determines to a considerable degree the technical policy and basic directions in the construction and operation of this type of urban transportation.

The convenience in using subways to satisfy the transportation requirements of passengers and to save time spent on a trip will depend a great deal on the selection of the placement of the line's right-of-way in the plan and in the section, the siting of stations and the size and layout determinations of lobbies and transfer corridors.

Based on many years of designing, construction and operating experience the main requirementsfor a line's right-of-way and the size and layout determinations of station complexes have been formulated. These are contained in Construction Norms and Rules II-40-80 which has been developed by Metrogiprotrans and the All-Union Scientific Research Institute for Railroad Transport. These requirements are aimed at creating the greatest conveniences for passengers, decreasing pedestrian traffic paths in lobbies and transfer corridors, the maximum use of mechanized movement systems and increasing the movement speeds of trains. A great deal of attention is being devoted to the building of handy transfer complexes between the subway and urban street transportation and also with suburban railroad stations.

The capacity of entrances, lobbies and passages between transfer stations and the number of escalators, passenger conveyors, control points and automatic tills are determined based on the size of the greatest passenger stream during the morning hours (peak) considering a 15-minute maximum and also considering the development of passenger generating installations close to the subway stations in the future. The norm for the estimated filling of cars has been decreased by 10 percent in comparison with the Construction Norms and Rules previously in effect.

When the height of the climb is four meters or more, the use of escalators, whose number is prescribed based on calculations considering the capability of repairing them by turns, is permitted. Stricter requirements for curves in the plan for the main routes, whose radius must be set at no less than 600 meters, have been established. Engineering, geological and city planning conditions are being taken into account more completely and thoroughly during the selection of the depth of the line's construction in order to insure the least expenditure of time by passengers for a trip and also to create the best construction and operating conditions.

Transfer centers from two or more stations, which are efficient in their layout, have been developed in the area of improving the size and layout determinations of station complexes during recent years. Thus, the time expended on a transfer in transfer centers with the matched movement of trains in the primary (passing) direction is 15-20 seconds all told, and it does not exceed 60-90 seconds in the opposite direction.

Designs have been developed and single vaulted stations, which are handier for passengers thanks to the absence of columns, are being incorporated into construction practices. The layout solutions of pylon and columned stations have been considerably improved by increasing the placement distance between columns and also by building so-called pylon-column stations.

The basic technical trends in the area of improving the construction of tunnel finishes are increasing reliability and durability and decreasing the consumption of materials and labor during construction.

The continuously growing amount of subway construction and the relative shortage of iron tubing have raised the extremely urgent task of developing equivalent facings made of reinforced concrete blocks and decreasing in every way possible the amount of iron tubing. As a result of improvements in the shape of the tubing and the use of very durable synthetic iron, the weight of one meter of iron tubing facing has been decreased more than twofold -- from 9.5 tons to 4.4 tons. The introduction of prefabricated reinforced concrete facings, which make themselves at home with the rock, permit a savings in cement of up to 700 tons per one kilometer of tunnel to be achieved.

At the present time, research is being conducted on the construction of reinforced cement blocks with tension bonds and with a metal waterproofing shield. This permits it to be used instead of iron tubing. Facings made from poured-in-place and extruded cement, which permit the expenditure of metal to be practically reduced to nothing and expenditures of cement to be decreased by eliminating the pressurized discharge of the cement solution for the facing, have proven to be extremely effective when constructing passing tunnels. However, the absence of reliable solutions for waterproofing this facing limits its sphere of application.

In the area of improving station designs, the building of single vault stations deeply underground in watery rocky soils and the expansion of the use of column and pylon stations without lower wedge-shaped coffer damns are also directed at decreasing the expenditure of iron tubing.

The enlargement of the assembly elements of stations and passing tunnels using the open-pit method of work and the widespread introduction of seamless section facings permit industrialization to be increased and labor expenditures on assembling these designs to be decreased.

The development and use of water protection hoods made of aluminum in inclined escalator tunnels and also of extrusion molded asbestos cement panels for arranging the panels of service structures are aimed at decreasing the consumption of labor during construction, increasing quality and decreasing operating expenses.

Increasing labor productivity, decreasing construction periods and costs, and improving working conditions during mining operations form the main content of the technical trends in the area of improving construction organization and technology.

The development of a set of equipment for constructing stations using the open-pit method of work "a wall in the ground" and the expansion of the use of anchor fastenings for the walls of the foundation pits permits the requirement for metal to be decreased and working conditions to be considerably improved.

In order to construct passing tunnels using the open-pit method, it is necessary to improve the technology of manufacturing seamless section facings with factory installed waterproofing and tunneling using the KMO-2x5 mechanized shield set. The development of design plans and specifications for an open-pit method shield for drilling one-way tunnels under complicated hydro-geological conditions is taking place. It is necessary to make a test model of it and conduct production tests.

For the construction of passing tunnels at a small depth, a further improvement in the technology of tunneling with poured-in-place and extruded facings is planned by using the TShchF-1 shield with a formed casing. This will permit the speed of tunneling to be increased, the quality and water tightness of the facing to be improved and -- in the final analysis -- the sphere of application of these advanced facings to be expanded.

It is necessary to further improve the methods for forcing tunnel facings through relatively short sections under railroad tracks and other large structures.

On the basis of improving the quality of engineering and geological research and determining more accurately the capabilities for using different mechanized shield sets (ShchNR-1; KT1-5.6; KT2-5.6; KT-5.6B2; KT-5.6D2; ShchNE-1S), it is necessary to expand the use of large-scale mechanization in tunneling processes and to build no less than a third of all tunnels of the non-open-pit method using a mechanized method.

The widespread use of BUR-2 drilling rigs and ABT-5.5 shaft-sinking sets is planned for hard rocky soils in order to mechanize work.

An important avenue in the area of mechanizing drilling operations is the development and use of a technology for the calotte cutting of single vault stations at a deep depth using the AMK-1 mechanized unit and also the conducting of experimental work to develop mechanized systems for working the face of pylon and column stations and small-scale mechanized systems for labor-intensive processes.

It is also necessary to further improve the equipment and special work methods for lowering the water table and freezing the soil during the construction of tunnels in unstable water-filled soils.

The technical trends in improving permanently operating systems, devices and equipment provide for an increase in reliability, an improvement in working conditions, and a decrease in capital and operating expenditures. The use of R65 rails and the protection ducts of the contact rail, which are made of polymer non-flammable materials, completely satisfies these requirements because durability is increased and repair and maintenance expenditures on the upkeep of the road are decreased.

The widespread use of the modernized VOMD-24A ventilator with an increased rotation speed, which is mounted on one shaft with an electric motor, and of ejection assemblies, which ventilate service branches using the inside air, in tunnel ventilation systems is being provided for. These measures will permit the amount of capital expenditures and of construction and assembly work to be considerably reduced.

The use of self-contained industrial coolers and ventilation of substation premises will permit the expenditure of artesian water for technological needs to be decreased.

The planned shift to the heating of stairways using heating cables instead of tubular electric heaters will permit assemblies in the area under the stairs to be done away with and capital and maintenance expenditures to be decreased.

The introduction of a power circuit for the 825-volt contact network with a redundant incoming transmission line and the use of UVKM-6 convertor rectifier units with TSZP-1600/10 dry-type traction transformers, which will have their capacity increased to 2,500 kilovolt-amperes, is being planned. This will permit the capacity of the traction network to be increased without increasing construction volumes, fire safety to be improved and maintenance expenditures to be decreased.

The work to improve the system for automatically regulating speed in order to insure the movement safety of trains when a train is being driven by one engineer will be continued. The removal of ATDP equipment from passing tunnels to special relay premises at the stations is being provided for. This will considerably improve the conditions for servicing it and eliminate the need for repair personnel to go to a tunnel when trains are moving.

In order to save scarce long-range communication cable, the use of equipment for multi-channel subscriber lines within the system of the subway's organization of administrative and management communications is being provided for.

The preservation of plants and architectural and historical monuments during the construction of subway lines and the protection of the atmosphere and water bodies from pollution during their operation are an important task during design work. An especially great deal of attention is being devoted to protecting housing from the unfavorable effect of the noise and vibrations which arise during the movement of trains in tunnels that are not very deep and on surface sections. In places where it is not possible to insure the normal separation of tunnels from housing, screened free-space constructions, increased weight tunnel facings, and resilient padding in rail fastenings are being provided for.

Sound-absorbent linings in service premises serve to decrease the effect of noise on maintenance personnel.

In order to increase fire safety, the use of flammable and easily burned materials is not allowed in the designs, and automatic fire extinguishing devices or automatic fire alarms are provided for in all premises where there are no people and where it is possible that a fire might break out.

Thus, when determining the technical directions of Metrogiprotrans work, the main principles for designing subways, which completely reflect the interests of the passengers, maintenance personnel and builders and also the requirement to continuously improve the effectiveness of construction and operation with the least disruption of a city's normal life and the environment, are taken into consideration.

8802
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DESIGN DETAILS OF MOSCOW METRO'S SERPUKHOVSKIY LINE STATIONS

Moscow STROITEL'STVO I ARKHITEKTURA MOSKVY in Russian No 10, Oct 83 pp 7-8

[Article by Ye. Kupreyenko, chief engineer of the project: "The Serpukhovskiy Line: Eight New Stations"]

[Text] Only days remained to the commissioning of the Serpukhovskiy line of the Moscow subway system. Its length (from Serpukhovskaya Station to Yuzhnaya Station) is approximately 14 kilometers. In accordance with the integrated plan for the development of the city's passenger transportation, the new line will be a component part of the Serpukhovsko-Timiryazevskiy radial and will unite the housing tracks south of the capital -- Krasnyy Stroitel, Chertanovo and Volkhonka-ZIL -- with the northern ones -- Otradnoye, Bibirevo and Degunino--through the center of the city. The segment of the underground railroad, which is being readied for commissioning, will bring a great deal of convenience to the inhabitants of Moskvoretskiy, Sevastopolskiy and Sovetskiy rayons.

The line begins at Dobryninskaya Square; passes under Bolshaya Serpukhovskaya Street, Podolskoye Highway, through Serpukhovskaya Gate Square, and along Bolshaya Tulskaya Street; intersects the track of the Paveletskiy branch of the Moscow railroad and Varshavskoye Highway (close to the platforms of Rechnoy station) and then the Maloye Ring of the Moscow Railroad deep underground; swerving to the east, it extends under the Varshavskoye Highway; and again intersects the tracks of the Paveletskiy branch near the platform of Nizhniye Kotly. Further on, the line passes under Elektrolitnyy Thoroughfare, Krivorozhskaya Street and Nakhimovskiy Prospect; and continues through Chernomorskiy Boulevard, Balaklavskiy Prospect, Chertanovskaya Street, Sumskoy Thoroughfare and Kirovogradskaya Street to the intersection of Sumskaya and Dnepropetrovskaya Streets.

There are eight stations on the line. Serpukhovskaya station has been built near the operating Dobryninskaya-Ring operating station. Both stations are connected by a pedestrian tunnel and an inclined passage with four escalators which form a transfer center.

The Serpukhovskaya Station is of the column-pylon type with an interval of 5.25 meters between the columns. Six passages open from each platform into the middle hall. The underground lobby is located under Bolshaya Serpukhovskaya

Street near its intersection with Stremyannyy Lane and is connected by platforms with the help of three escalators.

Almost the entire station is dressed in bright Gazgan stone. The pylons are faced with measured shape sheets of marble with metal framing in the joints made of a type of aluminum which has been anodized to a dark bronze.

Its designing is devoted to the ancient cities around Moscow. The panels on the travel walls were made by artist A. Novikova and M. Mikhaylov from Koyelga marble blocks (five compositions to each wall).

The next station, Tulskaya, is located between Serpukhovskaya Gate Square and the ramp of the Avtozavodskiy Bridge. The drilling of the tunnel sections between the stations was both complicated and difficult because of the alternation of very different rocks. The station, which is not very deep and which has a single vaulted span design, has two underground lobbies with two escalator ribbons and a staircase descent each. The lobbies adjoin the underground pedestrian passages which have a single six-meter wide staircase exit to Bolshaya Tulskaya Street.

The architectural solution provides for a vault with arches and ornamental plastic along the platforms which has been painted in a white color. Lights with luminescent lamps are located along the station's longitudinal axis.

The station's decorative and artistic design is devoted to the subject "Tula-a city of skilled craftsmen and a hero city".

The Nagatinskaya Station is of the column type with an interval of six meters between the columns. The subway station is located close to the intersection of Nagatinskaya Street with Varshavskiy Highway and has two underground lobbies. The northern one is connected with a pedestrian passage under Varshavskiy Highway and is linked with the platform of the station by a staircase 3.24 meters high. The southern one will have in the future a stairway exit to the platforms of Nizhniye Kotly Station. The lobby will be connected to the platform station by three escalators 9.6 meters long.

The thematic design of the station is the ancient history of Moscow. On the walls are colorful panels made of Florentine mosaics -- the work of artists E. Zharenkova and V. Vasil'yev.

The Nagornaya Station is of the column type with an interval of six meters between the columns. Its lobby is connected with a pedestrian passage under Krivorozhskaya Street 100 meters from its intersection with Elektrolitnyy Thoroughfare and is connected with the platform station by three escalators 9.4 meters high.

The architectural and artistic design is devoted to environmental protection.

The single-vaulted Nakhimovskiy Prospect Station has been built between Nakhimovskiy Prospect and the third line of the Varshavskiy Highway. It has two

underground lobbies. The northern one is connected with a pedestrian passage under Azovskaya Street and the prospect and is connected with the platform by two escalators 4.6 meters high (for the ascent) and a staircase (for the descent). The southern one is connected with a pedestrian passage under Azovskaya Street and is connected with the platform by three escalators with a height of 6.6 meters.

The thematic design is devoted to the great Russian naval commander Admiral Nakhimov.

The tracks which lead from the Nakhimovskiy Prospect Street to the next station-- Sevastopolskaya , was indeed a route of experimentation and searches for advanced drilling methods. To begin with, the subway builders successfully mastered here a new mechanized complex which permitted tunnel structures made out of poured-in-place and extruded cement to be built. A special experimental design with improved vibration isolation properties was built in order to decrease vibrations in the trains.

The Sevastopolskaya Station is of the column type with an interval of four meters between columns. It is located at the intersection of Azovskaya Street with Chongarskiy Boulevard. There are two underground lobbies here. The northern one is in the future; it will be connected with the platform by three escalators with a height of eight meters. One can transfer to the operating Kakhovskaya Station of the Zamoskvoretskaya line at the center of the platform section. The southern one is connected with a pedestrian passage under Azovskaya Street.

The architectural and artistic design of this station is devoted to the hero city of Sevastopol.

The Cherpanovskaya Station is of the column type with an interval of six meters between columns. It is located approximately 100 meters south of the intersection of Chertanovskaya Street with Balaklavskiy Prospect. The underground lobby is connected with the platform by three escalators 10.2 meters high.

Since Chertanovskaya almost abuts the experimental housing complex which is being completed by the builders, it is natural that the subject of its design is the successes of the Muscovites in building and reconstructing the capital. Not only the external appearance of the structure but also the technical daring of its designs respond to this idea. Dressed in white marble, they are expressive, original and laconic. The vault passes over in a plastic manner and rests on rows of well-proportioned columns with capitals. The architect and author of the project tried to make the station a modern one and achieved success.

Yuzhnaya is the last station on the new line. However, it will not be last for long -- only until 1984. In the future, the line will be extended to another section -- to the Prazhskaya Station. Our friends -- the Prague city planners -- are completing its architecture just as the subsequent finishing work. Simultaneously, the Moscow subway builders are making their own contribution to the building of Moskovskaya Station in the capital of fraternal Czechoslovakia.

... And so, the Serpukhovskiy line is ready to receive passengers. Let us talk briefly about its engineering equipment and about several innovations which have been incorporated in this outstanding construction project.

The stations, which were built deep down, and the transfer centers were erected with iron tubing; the stations, which are not very deep, are of two types: single-vaulted made with poured-in-place reinforced cement and columnar made out of prefabricated reinforced cement.

The most advanced work methods were provided for based on the engineering, geological and city planning conditions of the construction job. Thus, the Serpukhovskaya Station with its dead-end sidings and connecting spur-track was built by the mining method using drilling and blasting operations. It was at first proposed to build the passing tunnels, which are deep down, using the KM-24 mechanized complex. However, even here the mining method was more preferable and was also used.

It was planned to build the passing tunnels in the direction of Tulskaya Station by preliminarily freezing the soil. After additional engineering and geological research, it was decided to drive this section by basically lowering the water table artifically.

The builders tried to disrupt the city's normal life as little as possible during construction. In order to maintain the uninterrupted movement of trains and urban transportation, the tunnels, which are located under the railroad tracks of the Okruzhnaya Railroad and close to Avtozavodskiy Bridge, were built using the punching method.

It was planned to drive the section of the passing tunnels under the tracks of the Paveletskiy Branch of the Moscow Railroad, which were about 100 meters long, using the punching method. During the work, they decided to build the tunnels with shields, having carried out measures which insured tunneling without sediment from the surface.

The Serpukhovskaya line is equipped with all types of devices that guarantee normal and efficient operation. We are primarily talking about the power supply, tunnel and local ventilation, water supply, waste-water disposal, and waterways.

A number of advanced engineering solutions, which help to increase the reliability of all systems and which help to simplify their operation, were adopted on the new line. There are new and efficient light sources-- metal-halogen lights in the Chertanovskaya and Serpukhovskaya Stations and original illumination equipment -- the light conductor in the Serpukhovskaya Station. There are the electronic warning devices for the level of fluids. These are used instead of floating relays in the automation system for the operation of water-pumping installations. There are the semiconductor thermal regulators in the automation systems for the operation of local ventilation systems, etc.

Automatic speed governors, all-electric interlocking of switches and signals in the stations with track propagation, and remote signalling have, in

particular, been provided in order to insure the safety and accurate regulation of train movement.

A system of automatic safety interlocks without electromechanical automatic stops and protected sections with disconnected traffic lights has been adopted for the first time on the Serpukhovskiy line. The automatic safety interlock system is meant mainly for organizing the movement of supply trains during nighttime.

The seamless section facings, which were used during the construction of pedestrian passages with a length of more than 30 meters, are no less interesting This solution eliminates labor-intensive work on the concrete underlayer and a great amount of manual labor.

During the construction of Yuzhnaya Station and the dead-end sidings behind it, an advanced method for fastening the foundation pit's walls with ground anchors was introduced.

A shop for the centralized carrying out of routine repairs on the cars is being built in the Varshavskoye Electrical Depot. The construction of this shop will permit cars to be repaired in accordance with modular-line technologies. This will decrease the demurrage of cars for repairs threefold.

An experimental water-pumping device with horizontal pumps and evacuated vessels has been put into operation. These pumps do not have valves on the suction line. This simplifies their servicing and repairs to a considerable degree.

It is possible to continue listing the engineer and construction innovations on the Serpukhovskiy line. It is possible to boldly assert that the beginning of its operation is another frontier which has been taken in the multifaceted work of Soviet subway construction.

8802
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SUCCESSES OF NOVOCHERKASSK ELECTRIC LOCOMOTIVE INSTITUTE

Moscow GUDOK in Russian 1 Dec 83 p 4

[Article by Candidate of Technical Sciences V. Yanov, director of the Novocherkassk VElNII: "The 25th Anniversary of the VElNII"]

[Text] In November 1958, the Scientific Research Institute for Electric Locomotive Building was founded in Novocherkassk. Subsequently, this became the All-Union Scientific Research Design and Engineering Institute for Electric Locomotive Building (VElNII). The period of the collective's maturation occurred during the years of the expansion of electrified railroads and the related sharp increase in the output of electric locomotives. These were developed on the basis of scientific and technical achievements considering the development of semiconductor rectifiers.

During the years it has existed, the VElNII has designed 23 types of Soviet-built mainline and industrial electric locomotives. Using the institute's plans, the NEVZ [Novocherkassk Electric Locomotive Plant] builds electric locomotives for Finland and Poland. The GDR has purchased a license to produce from our plans an automatic wire and cable marking machine. The institute is working successfully on the development of a new type of magnetic-cushion transport.

The collective employs 37 candidates of technical sciences, 21 persons have received governmental awards for labor successes while 3 have been given the title of winner of the USSR State Prize.

A group of specialists headed by Candidate of Technical Sciences A. Lozanovskiy has successfully solved the problem of developing an AC electric locomotive with regenerative braking. The operation of these locomotives in 1982 made it possible to save 80 million kilowatt hours of electric power and 3,500 tons of brake shoes.

The developments of Candidates of Technical Sciences V. Bocharov and V. Shcherbakov, Engr N. Ivanchenko and others made it possible to increase the unit capacity of traction engines by 1.5-fold while reducing specific materials consumption.

The VElNII is confronted with many interesting and responsible assignments. The most important of them are: testing and preparing for series production of

the VL85 electric locomotive. The responsibility and importance of this work are determined not only by the fact that the new electric locomotive will be operated on the BAM [Baykal-Amur Mainline], under severe climatic conditions, but also by the fact that over the next 10-15 years it will become the base locomotive for developing a whole generation of 12-axle locomotives of various types and purposes. The VL85 has undergone the first stage of stationery testing at the VElNII.

In 1986, according to our proposals there are plans to introduce universal automatic control systems for electric locomotives based upon microprocessors and microcomputers.

The development of an electric locomotive with an asynchronous traction engine, the development of a system of automatic designing for electric locomotives and for the methods of their manufacture, the wider use of plastics and parts made from Cermets and the search for technical ideas which will ease the working conditions of the locomotive brigades--this is a far from complete list of the problems which are found in the work plan of the VElNII collective for the next few years.

10272
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RAIL SYSTEMS

MORE ON FUTURE KLAIPEDA-MUKRAN RAIL FERRY SERVICE

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 9 Dec 83 p 3

[Article by G. Pashkov, KOMSOMOL'SKAYA PRAVDA correspondent, Mukran--Berlin, December: "Trains Will Cross the Sea"]

> [Text] In the near future, Rugen Island in the GDR will be connected with the Soviet port of Klaipeda by a modern rail ferry.

The pirate schooner "Gedike Michel" was anchored in Prorer Weik. There was not a soul on board and only a sunny wind from the sea ruffled the single-sheet announcement: "Today the restaurant is closed."

On all the other days the old fishing vessel correctly received tourists and vacationers. Rugen, an island of 900 km^2 with a permanent population of 90,000 inhabitants, is visited during the year by several hundred thousand visitors. Rugen, close to the town of Stralsund, is firmly connected to the coast by a 3-km levee with busy rail, motor and pedestrian traffic.

A small development has been laid out on the resort coast. On the Baltic there are no other non-resort ones. The site here was also chosen after long and careful consideration. Said Lothar Roth, the chief engineer for construction and technical preparations:

"We chose Mukran precisely for a number of important reasons. It was closest from here to Klaipeda. Great depths begin close to shore as vessels with a 7-m draft will come in here. Here also there are convenient connections to the already-existing rail network. The attractiveness of the island as a popular vacation area will be fully maintained. For the tourists there will even be one other sight."

A strip 800 m wide along the shore stretches 4.5 km. Here are to be located the railroad facilities of the seaport. Here some 60 km of steel track will be interconnected into a tight knot. Here the track ends in the water. And 273 miles away from here, in Klaipeda, it will reappear at the water's edge.

A complex shore facility is essential for the rapid marshalling of the cars. They must be selected by destination and by weight before they move onto the double-deck ferry over a 40-m vertical lift bridge.

In mentioning the word "ferry," a seagoer would imagine something creaky and slow moving. But a modern ferry is just as distant from an old wooden one as is the pirate schooner from a hydrofoil. An ode could be sung to today's and particularly to tomorrow's ferry in which lines about profitability, ecological purity, on-timeness, carrying capacity and speed would be accompanied by a refrain of the words "most and very most." The main thing is that the freight cars will travel over the water from the GDR to the Soviet Union in 20 hours, several-fold faster than the freight trains presently move across the overloaded rail tracks through Poland.

The schedule for the "Baltic Carter" even now is being prepared with aviation-like accuracy: 990 minutes for the crossing between Mukran anad Klaipeda. Five minutes for turning the 180-m vessel before docking. Fifteen minutes for mooring. The tieing-down and loosening of the 103 four-axle cars will take 20 minutes.... In 2 days each vessel will make a complete round trip from Mukran to Klaipeda.

An old man lived with an old woman. In an old house right by the Baltic Sea. The old man at one time had netted fish. And now the 74-year-old Karl Bischof, the oldest man in Mukran, recalls how in 1928, they (16 fishermen on four boats) formed a cooperative in order to set out their nets together and together escape from hard times when the fish moved out far to sea.

The solitary fisherman's house from sleepy old Mukran suddenly ended up at the very center of an enormous construction site. It had to be pulled down. Karl Bischof, having moved into the modern settlement growing up nearby, is waiting for that day when the supermodern liners will arrive at "his shore."

Administrative and service facilities have already gone up from modular units in the place where his house stood. The Komsomol secretary of the project Rolf Majewski should occupy one of them, under the blue flag of the FDJ [Free German Youth].

However, it was very difficult to find Rolf in his place. We searched for him and found him by phone. This was understandable as there were some 2,000 persons employed here now. In the following year there will be twice as many construction workers. Among them are many young persons and also many members of the FDJ. Some 11 youth brigades are already at work. And there will be even more of them.

Now we were on our way to a youth construction brigade of Udo Schakulat, in Mukran.

We introduced ourselves. The brigade has 5 carpenters, 2 concrete workers and 2 stone masons. The oldest is the brigade leader Udo Schakulat who is 22. The young fellows are installing warehouse and service facilities, they are putting up the meal unit and are also laying foundations and track. Of course, this is a wide area of work and reduces productivity. On the other hand, while problems, alas, are inevitable at the start of any major project, they have virtually no work stoppages as there is always work for the brigade.

We spoke about the American missiles in the neighboring country, in the FRG, and about the Rock for Peace Concerts in the neighboring city of Sassnitz. We said that next year a new store, new residences and nurseries would appear in Mukran.

"Here," said the brigade leader nodding toward the window, "we will build a depot for changing the car trucks from the broad Soviet gauge to our narrower one."

The fellows were already attacking their FDJ secretary with urgent questions. Again there had been stoppages in transport as they had to walk to and from work and it was a long ways. They still had not received the promised electric drills and this impeded the work!

Pace, efficiency and productivity. At the project these words are now on the lips of everyone, from the top to the bottom. Said Rudolf Sickert, the chief of integrated construction: "We are carefully working on the conditions of the socialist competition. Precisely at such a large project, any, even seemingly insignificant savings ultimately provides major results. We are far from indifferent to the expenditures required to carry out the work. And we want to build not merely a port. Our Mukran should be a high-class port and handle the freight turnover on the highest world level."

The ferry between Mukran and Klaipeda will actually be an unique transport facility. The first stage of this major transshipping point in the constantly growing trade between our countries will receive 5 million tons of freight a year.

Work will soon be started at the other end of the ferry crossing, in Klaipeda.

We also discussed this with the youth brigade. The foreman Ulrich Brand told the fellows that, of course, the Soviet construction workers had worked out the production methods better and from the outset there would be greater order at the construction site. How I wanted to agree unconditionally with them! But....

The foreman and the brigade leader looked at each other and described what they had already discussed with their brigade: "Let our Soviet colleagues visit us before the start of the construction work in Klaipeda. We will tell them how we began the project here and what difficulties we encountered. It would be a good thing to conclude an agreement on a competition between the youth brigades. We have a common goal and both terminal stations of the sea ferry should go into operation simultaneously."

Rolf Majewski added that the youth brigade of heavy truck drivers had also been dreaming about a competition with their Soviet colleagues. In Mukran they must move 3 million m^3 of dirt. And the lion's share of this amount will lie in the bodies of the Soviet-made MAZ and KrAZ trucks which are widely being employed at the project. Of course, they will also be employed in Klaipeda. And here the drivers have proposed a competition over who uses the Soviet equipment more efficiently?

Lutz Kunzel, a journalist colleague from the economic section of the newspaper JUNGE WELT with whom we had come to Mukran, was already estimating how it would

be possible in such a competition to compare labor efficiency of the Mukran and Klaipeda construction workers so that the exchange of experience would more quickly produce a weighty economic effect. The fellows were already dreaming of the day when the winners of the international socialist competition would become the first passengers on the first liner of this ferry line.

And this day is not so far off. The first ferry boat will be delivered by the Mathias Thesen Yard in Wismar in less than 3 years. The Mukran construction workers consider it a matter of honor to also ready the shore facilities by this date. This labor gift is now being prepared for here for 7 October 1986, the day of the founding of the GDR and the USSR Constitution Day.

Future construction workers at the ferry port in Klaipeda, write down this address: GDR, 2355, Rugen-Mukran, FDJ Committee. You are being challenged to an international socialist competition.

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PROJECTS AT MOSCOW RAILROAD TRANSPORT INSTITUTE

Moscow MOSKOVSKAYA PRAVDA in Russian 1 Dec 83 p 1

[Interview with A. L. Lisitsyn, director of the All-Union Scientific Research Institute for Rail Transport: "On the Main Line"; date and place of interview not given]

> [Text] Among the scientific institutions of Moscow which in the third year of the five-year plan have achieved high work indicators is the All-Union Scientific Research Institute for Rail Transport [VNIIZhT]. Its collective, having initiated a socialist competition to fulfill ahead of time the quotas of the annual plans and the obligations, has completed and turned over to the national economy a number of original, highly effective developments. The director of the VNIIZhT, A. L. Lisitsyn, described to our correspondent how the institute's specialists are involved in carrying out the decisions of the 26th Party Congress, the subsequent plenums of the CPSU Central Committee and the Decree of the CPSU Central Committee and the USSR Council of Ministers "On Measures to Accelerate Scientific and Technical Progress in the National Economy."

The necessity of converting the economy to the path of intensive development relates greatly to our sector. The complaints which the operation of rail transport at times have caused are a rebuke not only to the collectives of the depots, stations and terminals but also to us, the representatives of sectorial science. We realize that only on the basis of introducing the latest scientific and technical achievements is it possible to successfully handle the tasks confronting rail transport.

Considering this, the collective at our institute sees its primary task in making the effective technical ideas--and many of them have been accumulated--quickly be developed in prototypes and set for production. Here undoubtedly an important role can be played by improving the organization of the socialist competition between the institute's subunits. The communists and the entire collective are already working in this direction.

Professional ties with the producers also must be expanded and updated. We are endeavoring to seek out effective forms for such contacts. For example,

recently the institute conducted a 2-day seminar meeting involving the chiefs and chief engineers of all the nation's railroads and the leaders of the ministry. Many important and effective measures were outlined.

But the success in implementing these plans will depend largely upon how our collaboration with the enterprises of the Moscow Railroad works. Certainly this railroad traditionally has been the pioneer in introducing technical innovations. Our contacts with the workers of the capital mainline are old and effective.

However, the capabilities of the Moscow Mainline as an unique testing range for the sector as yet have been far from fully employed by us. This applies primarily to automatic controls and computers. Here there have been certain successes with the setting up of ASU [automated control system] at the Lyublino, Perovo and certain other stations. But their introduction as yet has been used to solve only partial problems which do not encompass the Moscow rail junction as a whole. We see our task also in moving from the elaboration of individual devices and technologies to the rapid development and introduction of full automated control systems for rail shipments. And again, like a powerful weapon, the development of the socialist competition in the collective will aid us in carrying out this reorganization. The flexible system of summing up its results makes it possible to consider the actual contribution of one or another subdivision to carrying out the most important tasks which at the given moment confront the institute.

Certain of these tasks have already been mentioned. Among the others one must mention the problem of reducing heavy manual labor in freight handling operations. Particularly acute at present is the question of helping the transport workers in the transporting and storage of vegetables and potatoes. Thus, in a short period of time institute specialists worked out and along with production workers manufactured a new inertial machine for unloading potatoes from the cars. It reduces car stoppages by 10-fold, excluding in each instance the use of the heavy labor of 6-8 workers. In the recently completed procurement season, such a machine at the Sokolniki vegetable depot unloaded around 9,000 tons of freight.

A good effect has been achieved. But the introduction of such a machine is only a part of the question. It is essential to mechanize the entire capital's vegetable conveyor line. Naturally, this is being worked on now by many scientific research institutes and design bureaus in the city. These efforts would not be termed well coordinated. And production facilities are clearly lacking. This harms not only the work of the vegetable conveyor line. At times the efforts of the developers of new equipment are wasted as their plans at times duplicate one another and are not carried out for a long time.

The same also applies to the development of such a very popular type of Moscow transport as the subway. Certainly its resources are not infinite. A step ahead must be taken on the basis of the most recent scientific and technical achievements. Considering this, our collective has begun research in the area of modernizing and increasing the reliability of the rolling stock, the power supply equipment and escalators as well as introducing automatic control systems. The party organization has been very closely involved in coordinating

this work. We have considered the importance of such research in summing up the results of the socialist competition.

Here is a practical effect.... But it could have been significantly greater if the developments of our specialists had been effectively tested at an experimental facility, as we do with innovations destined for the railroads. Moreover, the opportunity for setting up such a testing range for the technical equipment of the subway does exist. There is also a decision for building this. But the Main Architectural and Planning Administration is still dragging its feet in assigning a plot and this matter has suffered.

Of course, it would be incorrect to justify all the shortcomings in increasing the practical return from the institute's developments by "objective" factors derived from outside. No, there still are many internal reserves. Our specialists do not always incorporate optimum technical ideas in the plans being worked out. The combating of unimportant questions and the dispersion of efforts has not ended. At present, these questions are at the center of attention of both the party organization and the institute's leadership. We are confident that during the current five-year plan the practical return from the collective's work will significantly rise.

10272
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NEW LABOR-SAVING TRACK MAINTENANCE EQUIPMENT TO BE PRODUCED

Moscow ECONOMICHESKAYA GAZETA in Russian No 49, Dec 83 p 19

[Article by V. Korotkov, director of the Central Design Bureau for Heavy Track Equipment: "So That the Track Remains 'Velvet-Smooth'"]

> [Text] A series of 5 machines operated by 11 persons will replace the labor of 320 track workers on the steel mainlines.

In order that the track remains "velvet-smooth," as passengers sometimes say, the rails must be cleaned, lubricated and reinforced, the ballast under the ties must be repacked and the ballast prism itself straightened out.

Incidentally, specialists say that this is already half the job. It is not enough to compact the ballast under the ties. It is essential to pick up heavy rams and with them "drive" the ballast between the ties. Otherwise, with the passage of the trains, the ballast "leaks out" and the ties must be repacked. The packing of the ballast is a very labor-intensive operation and, alas, it is not always done.

The experimental shop of the Kaluga Machine Building Plant recently manufactured a prototype of a ballast-packing machine called the BUM. This event completed the work carried out by the collective of the Central Design Bureau for heavy track equipment of Mintyashmash [Ministry of Heavy and Transport Machine Building] to develop a series of units for routine track upkeep. All five machines have undergone state testing and have been adopted for series production. The series includes: a ROM rail cleaning machine developed under the leadership of the chief designer of the project G. Vaynshteyn, a PMG machine for loosening, lubricating and tightening the nuts of the clamp and laying bolts (chief designer D. Borzilov), the VPR or aligning-packing-straightening machine (chief designer of the project F. Fedorov), a universal ballast-spreading machine or UBRM (chief designer of the project N. Sein) and, finally, the BUM machine (chief designer of the project G. Smirnov). In the designing, the designers obtained 17 certificates of invention and more than 100 innovation proposals of the railroad workers and machine builders were considered.

Each of the machines is equipped with a powerful power unit capable of not only supplying power to the working parts but also providing independent propulsion of the unit.

The operating principle of the equipment is interesting. The ROM cleans the rails by high pressure jets of water. The PMG is equipped with automatic nut looseners. These locate the nut, loosen it a certain number of turns, lubricate it and tighten it. The VPR machine automatically aligns the track in the plan view and profile with an accuracy to a millimeter and packs the ballast under the ties. The blades and brushes of the UBRM move the ballast, in strictly following the profile of the arm and the slope of the prism without leaving cavities in the tie boxes. In the concluding operation the BUM compacts the prism.

The machines employ the most advanced methods of controlling the mechanisms, including: thyristor converters, remote control units, electronic speed stabilizers with feedback sensors, laser radio-controlled trolleys, gyroscopic pendulums, and high-momentum hydraulic drives with remote plunger sets.

Regardless of the complexity of the equipment and its significant cost, the economic effect in operating the chain reaches 800,000 rubles. This means that each such chain of equipment is paid off in one year of operation. There is also a social effect from the new track equipment. Labor is immeasurably increased and eased, and the prestigiousness of the profession of track repairmen is increased. They are confronted with a prospect of continuously improving their skills.

The changeover to the production of the new complex equipment at the Tikhoretsk and Kaluga machine building plants has been accompanied by major changes in the nature of production. Here they have organized training for the railroad equipment operators and service stations have been organized where the units are to be operated.

In rail transport enthusiasts of full mechanization of routine track maintenance have appeared, particularly on the Moscow Railroad.

But obstacles and difficulties are also encountered. The Ministry of Railroads has still not put in its weighty word. As yet, a technological process has not been worked out for fully mechanizing routine track maintenance. Construction of sheds and the remaining facilities is carried out, as a rule, using the direct labor method and technical documents which do not consider the prospects of mechanization. The railroads must have a standard plan for an equipment yard.

Still poor is the training of track mechanics in the transport VUZes. A specialization of "track equipment" is lacking and specialists are trained on the chair for construction and road equipment. But track equipment in its design has more in common with locomotives than with construction equipment. A track specialist must have a good knowledge of electronics, computers, electrical engineering, power units and hydraulics. We feel that the VUZes and technical schools which train track mechanics should adjust their programs.

Unfortunately, the production volume of track equipment at the enterprises of Mintyazhmash is completely insufficient. The steel lines require 150 sets a year while the Mintyashmash plants at present produce 14 units of the PMG and 36 units of the VPR. The manufacturing of the tested UBRM unit has not yet

been started. The Tikhoretsk and Kaluga plants have been slow in preparing and beginning industrial production of the ROM and BUM machines. Next year they plan to manufacture only two of each of the machines of these types. Up to now not a single complete set of these machines is in operation. They are being employed individually and at different places.

Recently the USSR Gosplan set out measures which would make it possible to accelerate the completion of shop construction at both plants. But the problem of routine upkeep of the railroad track of the Ministry of Railroads must be solved on an integrated basis, starting with the production of the machines, the training of personnel and ending with the construction of facilities for housing and repairing this equipment.

Let us recall that the railroads, not counting industrial rail transport, employ around 4 million workers in the repairing and upkeep of the track. Increasing labor productivity in this area of the rail system is an urgent task.

10272
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PROBLEMS MAR FIRST ER200 HST REVENUE RUN

Moscow GUDOK in Russian 3 Mar 84 p 4

[Article by V. Pogorelyy and A. Zayentsov, special GUDOK correspondents: "Test after Test"]

[Text] The silvery ER200 rocket, protruding along the platform of Moscow station, promised much. One seemed to hear the heart-rending rumble of its powerful engines, the whistle of the wind behind the window, and to see the trees, blending into a solid wall along the track. Everyone knew at noon on March 1 that this speed was 200 km/h. But no matter what happened there, the beginning of rapid passenger traffic on the Leningrad-Moscow section was surprisingly smooth. Only the figure on the notice-boards set up in each lounge and the knock of the wheels on the switch-point suggested: Let's go! Good-bye Leningrad, hello Moscow!

In 5 minutes, the speed was 120. In 8 minutes, it was 130 km/h. According to the estimates of experts, the train could reach a speed of 200 km/h in this time. But alas, so far the notice-board would show this cherished figure only several times during the whole trip.

The engineers of the brigade that drives the express after Bologoye are here in the service lounge. A. Marin and V. Borunov work their section of the route. When they enter the control compartment they must not be distracted for a minute. The speed is marked on 100-meter stakes, but the train will rush past them at a speed of 50 m/sec. The gray March snow lies along the tracks, hiding the stakes set every 100 meters, which is why the crew's coordination of actions is so important. It is here that they must really learn to catch each other's meaning at once.

The conduct of ER200 Senior Foreman A. Kirillov's "team" is the most characteristic witness to the train's normal functioning. The team will ride along on all trips, monitor the equipment and eliminate defects. The best specialists in the brigade were selected; they know the equipment by heart, but, of course, it would be better if they did not have to show their skill. So far the most important thing they must do is, during the 8 minutes of scheduled idle time in Bologoye, to run alongside the railway cars and inspect axle boxes, reducer bearings and the vibration dampers.

But ordinary railway life goes on on the train. On some the trip's uniqueness has made absolutely no impression and they, comfortably reclining in armchairs, are sleeping. Conductors offer passengers newspapers and magazines and waiters serve sandwiches, juices and mineral water.

Suddenly, something changes subtly. At first you do not comprehend. Of course, it is the sensation of motion. Here they are--200 km. Exactly on schedule, the ER200 reached maximum speed and passed the designated section at that speed.

"200, 200, 200", rustled through the railway cars. The mood on the train noticeably lifts. Each second brings Moscow nearer, each kilometer increases the certainty.

One cannot push his way through in the bar-buffet: Now that he is on this trip, he must try everything out and, to put it mildly, there is not much room. But one should give credit to the Leningraders who served the passengers nonstop, although this, apparently, was not easy. The designers were not very concerned with the comforts of the service personnel.

Bologoye is closer and closer. Kirillov's brigade delegates responsibilities--what to entrust to whom. Ahead is the last rate section, then they stop. The velocity meter reads 180. They should reach 200 without difficulty. But what is this? The speed falls, falls, falls. The train almost stops. A red light is ahead. Engineer M. Dubrov explains:

"Somewhere the track circuits locked. As suggested, we reduced speed, then, reaching an agreement with the dispatcher, increased the speed to 50. In general, while we attained the scheduled speed, we lost 6-7 minutes."

The Oktyabr'skiy traffic controllers had a hard time getting the ER200 through; they had to delay several trains. So the schedule is rigid, and the loss of 6 minutes is irretrievable.

When Bologoye was 100 km away, the sixth car acted strangely, the shaking intensified somewhat, but all compressors operated without being cut off.

Here is Bologoye. From the head compartment one can see the repairmen scatter from the car in the distance. The traffic light is green. As if at a competitive relay-race, fitter V. Kulik runs from box axle to box axle. His motions are precise, he runs up, feels the box axle and inspects the damper. He does the same to the next ones until he has seen them all. He did not detect any defects. But mechanical engineer N. Bokovoy and fitter V. Karatanov still had to demonstrate their skill on the sixth car: A stone had knocked off the pressure line pipe. They corrected the defect as quickly as possible but still added several minutes to the delay.

The day before, in the preparation commotion, when the depot director, V. Rukhtenkov, was asked what worried him most of all, he unexpectedly answered: "The weather. As long as it doesn't snow."

It did not snow, but there was enough unpleasantness anyway. When the ER200 rushes along, the air turbulence pulls everything up from the rail grid. This is where the stones came from and how snow gets into the electric equipment. It melts in the heat and water causes a short circuit.

Although the ER200's first trip was not altogether successful, the passengers were satisfied, but felt that the holiday promised by the railway workers was over and they were disappointed that the trip had not finished when it should have--in 4 hours, 59 minutes.

"We are the first", says mechanical engineer N. Bokovoy, "and the first is always harder. We are trying to see that successive trips are more successful."

12421
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COLLEGIUM NOTES RAILWAYS PERFORMANCE PROBLEMS IN JANUARY-FEBRUARY PERIOD

Moscow GUDOK in Russian 2 Mar 84 p 1

[Unattributed article: "Increasing Level of Performance Requirements and Responsibility"]

[Text] A joint open meeting of the Railway Ministry Collegium and the central committee presidium of the trade union of railway transport and transport construction workers, with party and trade union members of the Railway Ministry participating, was held yesterday, March 1. The meeting discussed tasks for implementing the February (1984) CPSU Central Committee Plenum's resolutions on railway transport.

Railway Minister N. S. Konarev gave a report.

The speaker and debaters emphasized that the resolutions of the party's February Central Committee Plenum and the speech at it of General Secretary of the CPSU Central Committee Comrade K. U. Chernenko demonstrated the unbending will of the party to firmly and consistently progress along Lenin's path, purposefully guiding the line developed by the 26th party congress and successive CPSU Central Committee plenums.

It was noted that the transport plan was fulfilled for 2 months in 1984. However, in February, considerable irregularities occurred in train traffic, which caused a reduction of quality and quantity indicators, and untimely delivery of fuel, fertilizer, cement, lumber, and a number of other goods.

Practice has shown that workers work steadily and successfully cope with planned tasks on roads well prepared for winter. In addition, causes of losses and errors were thoroughly analyzed, specific culprits of disruptions were named and attention was drawn to the necessity of increasing in any way the exactingness and responsibility for the entrusted deed. A set of measures aimed at more rapid elimination of defects and the energetic improvement of work in all links of the transport conveyor was planned. Special emphasis was placed on the importance of unconditional rhythmic fulfillment of transport plans for the entire list of cargo, realization of assumed obligations for the growth of labor productivity, reduction of production cost, improvement of the use and maintenance of technical transport means and assurance of safe train traffic and cargo preservation.

Serious attention was devoted to improvement of passengers' service environment at stations and on trains.

Participating in the work of the Railway Ministry Collegium and the trade union's Central Committee Presidium were the first deputy chief of the Transport and Communications Department of the CPSU Central Committee, V. I. Davydov, sector head of the CPSU Central Committee Transport and Communications Department, P. D. Monyakin, and responsible workers of the USSR and RSFSR Soviets of Ministries, the USSR Committee of State Control and the USSR Procurator General's office.

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'ROUNDTABLE' ON PERSISTENT TIMBER SHIPMENT PROBLEMS

Moscow GUDOK in Russian 6 Jan 84 p 2

/Article: "Strengthen Contacts for the Rapid Delivery of Timber Freight--A 'Roundtable' Sponsored by GUDOK and LESNAYA PROMYSHLENNOST'"/

/Text/ In specifying the most important tasks confronting the country's economy, Comrade Yu. V. Andropov emphasized at the December (1983) Plenum of the CPSU Central Committee that transport, perhaps more than any other field, has reserves and unutilized potentials which could be put into operation within a very brief time period. It was precisely such unutilized potentials which were discussed in a "roundtable" session sponsored by GUDOK and LESNAYA PROMYSHLENNOST' and devoted to hauls of timber freight.

Last year favorable shifts were noted in the joint work of railroaders and loggers: as compared with 1982, hauls increased by 6 percent. Nevertheless, the plan for transporting this freight was not fulfilled. What were the reasons for this failure? What lessons ought to be drawn from them? These questions were at the center of attention for the specialists from USSR Gosplan and the Main Administration for Timber Supply and Sales under USSR Gossnab, MSSR Ministry of Railways, and Ministry of the Timber, Pulp and Paper, and Wood Processing Industry, along with scientists from these departments and representatives of the Central Committees of the sectorial trade unions taking part in this session.

The Plan Is the Principal Thing

In analyzing the results of 1983, the discussion participants were compelled to pose the following question: "Why was it that last year empty cars often arrived where there was no timber ready for loading, while they could not seem to reach those points with over-filled storage facilities?" One of the reasons for this, it turns out, is the fact that there has been no systematic balance between the raw timber resources presented for hauling and the number of cars being allocated for this purpose. That is, it comes down to a matter of imperfect planning. Thus, the East Siberian, Transbaykal, Far Eastern, and Baykal-Amur Mainlines regularly delivered cars in accordance with the

requisition orders. However, they were unable to ship out enough to meet the assigned total of 2.6 million tons of timber: the loggers were short of output.

As emphasized by the chief of the Department for Planning Hauls of Timber and Building Items of the Main Freight Administration of the Ministry of Railways, G. Lemeshchuk, a similar picture was also to be observed in 1982. But what conclusion was drawn? The Soyuzglavles /Main Administration for Timber Supply and Sales/ under USSR Gossnab proposed that hauls of wood be increased in 1984 by 30 percent, as compared to the actual level of 1983. This means that the timber-shippers would already in January have to increase by one-third the procurement, shipping out, and processing of their output. And the railroaders, in order to handle its transportation, would require an additional amount of more than 25,000 cars during the course of the year. At the same time, analysis indicates that the enterprises of the Ministry of the Timber, Pulp and Paper, and Wood Processing Industry are not prepared to assimilate the announced volume of hauls neither with regard to the presence of resources nor with regard to the degree of technical equipment of the rail sidings.

G. Lemeshchuk drew the attention of the "roundtable" to yet another shortcoming: the delivery plans put forth by Soyuzglavles under USSR Gossnab contain a very large amount of inefficient hauls. Thus, 65,000 cubic meters of hydrolytic raw materials are dispatched from the Yegorshino--Tavda Section, only to encounter the same kind of freight proceeding in a westerly direction. From Krasnoyarsk Kray and Irkutsk Oblast industrial-type, coniferous wood chips are shipped out to the Bratsk and Ust'-Ilimsk LPK's /Lumber Industrial Complexes/, while from the Bratsk Division they are being shipped to the country's European section. Spruce and fir loads from the Obozerskaya--Malenga Northern Section are "riding" on the October Railroad to the Svetogorsk TsBK /Pulp and Paper Combine/, while coming out to meet them are exactly the same kinds of materials for the Kondopozhskiy TsBK. And there are many similar examples.

As noted at the December (1983) Plenum of the CPSU Central Committee, we must work out the necessary measures to institute the required order in the deployment, specialization, and cooperation of production, as well as the elimination of many needless hauls which meet each other coming from opposite directions and which are burdensome to the entire economy.

In the general opinion of the participants in the discussion, a very wide assortment in the products list also complicates the fulfillment of the delivery plan. We must be more determined in carrying out specialization of enterprises in turning out limited types of products. Then it will be easier to concentrate deliveries. But meanwhile this is not the case, and the timber farms frequently have the following situation: the storage facilities are overfilled and there are cars, but the person in charge of the timber supply and sales organization does not give the "OK" to ship out--there is not the necessary assortment today.

But just how should the planning be improved? V. Batishchev, senior engineer of the Transport Department of USSR Gosplan, took the floor: "The timber loading conveyor would begin to operate more rapidly and smoothly if the planning of hauls were entrusted to the USSR Ministry of the Timber, Pulp and Paper, and

Wood Processing Industry, relieving Soyuzglavles of this function.

This proposal is not a new one; it has long been discussed in the pages of our newspapers, but so far it has not found support, especially not in the Ministry of the Timber, Pulp and Paper, and Wood Processing Industry. A paradoxical situation has taken shape: more than 70 ministries and departments of the USSR and the Union republics--the so-called "self-procurers"--autonomously plan the modest-sized hauls, while such a major Union ministry has recourse to Soyuzglavles for aid. In a practical sense, the workers of the Ministry of the Timber, Pulp and Paper, and Wood Processing Industry have been deprived of the right to switch around their own resources for the purpose of fulfilling the delivery plan. It is simply impossible to give them such a possibility.

What Should We Place Our Wager On?

Meanwhile, radical changes in the timber conveyor are acutely needed already now. If in December 6,500 cars were shipped out daily, stated the deputy chief of Soyuzglavles, V. Vorob'yev, then in January this figure must be extended to 7,500--8,000. Fulfillment of this task depends, to a large extent, on how smoothly empty cars will be delivered to the loggers. Particular attention must be paid to this by the workers of the October, Northern, and Gorkiy Mainlines.

But it is no less important to utilize rolling stock in a business-like manner. What is being undertaken today in order to cut down on its losses?

As the participants in the discussion were informed by the chief of the transport administration of USSR Ministry of the Timber, Pulp and Paper, and Wood Processing Industry, A. Prokhorenko, 40 million rubles have been allocated during the present year for developing the loggers' transport system. Provisions have been made to expand the ground-level lumber-yards, strengthen the superstructure of the rail sidings, install 240 additional cranes, increase the diesel-locomotive pool, etc.

"When you take a look at this plan of measures for reducing periods of idle time, your soul is gladdened," remarked the deputy director of the administration for guaranteeing empties loading of the Main Traffic Administration of the Ministry of Railways, V. Krylov. "But it is far from being carried out in the best manner. In 1982, out of 914 measures 232 were not implemented. The state of affairs is particularly disturbing in such major associations as Krasnoyarsklesprom, Irkutsklesprom, and Dal'lesprom: the idle time of cars there is more than double the norm." Yes, these facts are extremely unsettling. The transport administration of the USSR Ministry of the Timber, Pulp and Paper, and Wood Processing Industry must be strict in handling cases of persons specifically guilty of holding back rolling stock.

When the "roundtable" talk turned to the "nature" of the refusals to accept empty cars, the chief of the ground-level lumber-yard section of USSR Ministry of the Timber, Pulp and Paper, and Wood Processing Industry, V. Tyumin, referred to the fact that, as he said, the railroaders often deliver flat-cars instead of gondola cars.

Of course, it is a labor-consuming matter to place timber on such rolling stock. But, on the other hand, the static load is 5--9 cubic meters higher, and, furthermore, it is easier and faster to free up flat-cars. Therefore, they should not be rejected out of hand.

Under the conditions of an acute shortage of empty cars, the workers in closely allied fields should seek out mutually acceptable solutions as actively as possible. It is a well-known fact, for example, that wood-chip panels were hauled in boxcars up until recent times. But herein their freight-load capacity was only being half-used. What, then, is the solution to this problem? This was talked about by V. Sitskiy, an employee of the Soyuznauchplitprom Association. At a number of enterprises--the Alapayevsk DOK [Wood-Processing Combine], the Monzensk DSK [Home-Building Combine], and the Cherepovetsk Plywood and Furniture Combine--the bundled panels are placed in gondola cars. This innovation promises to have a significant effect--the static load is increased by 25--30 tons, which allows approximately 30,000 cars a year to be freed up.

A detailed, motivated conversation was held around the "roundtable" on the necessity for utilizing all the levers to speed up the timber-freight conveyor. One of them, as Professor V. Osipov stated, is mapping out express routes. A car which is included in an express route is moving 70 percent of the time and standing still only 30 percent of the time. But in the case of an ordinary train the picture is just the reverse. But this progressive method of hauling has, for some reason, not been developed to the degree it should have in shipping out timber: its level here is only 19 percent.

But just what is hampering the expansion of the area of express routing? Above all, it is the scattered nature of the loading points. Of the 2,100 stations, more than half dispatch fewer than five cars per day. Therefore, the discussion participants concluded, it is necessary to concentrate the loading.

V. Buyanova, a sector chief of the VNIIZhT [All-Union Scientific Research Institute of Railroad Engineers], accorded particular attention to the quality of express routing. The distance of most present-day express routes does not exceed 400--500 kilometers. Then they branch out, and the "timber" cars are included in regular trains. Consequently, the necessary effect is not produced. That is why we need to dispatch more direct trains, proceeding straight through to their final destinations without reprocessing.

M. Aleksandrov, chief of the department for express routing of hauls of the Ministry of Railways' Main Freight Administration, considers that it would be feasible to create major support stations where express routes could be formed up. Moreover, consignees ought to show concern for expanding the unloading areas and be prepared to receive direct trains. In order to monitor the fulfillment of the express-routing plan, it is necessary to introduce cards; with a notation as to the arrival at the final destination, these must be returned to the shipper-dispatcher.

The volume of hauls could also be noticably increased by means of more effective utilization of leased and the enterprise's own cars. However, these cars are not being used satisfactorily: their turnover has been overstated, and

the static loads are below the norms. They belong to the consignees of the timber, and they take the following position on this matter: the raw materials have been delivered--the car workers can wait a while. Would it not be better for the owners of the leased rolling stock to become the suppliers of the wood products?

Nor, unfortunately, is everything yet well with the bundling of timber. The specialists have computed that every million cubic meters dispatched in bundles frees up 2,000 cars.

But how has this method been applied in the sector? Last year's plan for shipping out wood products in bundles was unfilled by more than 6 million cubic meters. Very little use is yet being made of the progressive method of shipping out freight at the Arkhangel'sklesprom, Krasnoyarsklesprom, Irkutsklesprom, and Kirovlesprom. Utilization of this reserve is an extremely important task for workers at associations.

Plus Competition and Advanced Experience

M. Nesterov, an instructor in the Central Committee of the Trade Union of Railroad Transport Workers and Transport Construction Workers, reminded the discussants of the following: at the beginning of 1981 the central committees of the sectorial trade unions adopted a joint decree on organizing a socialist competition among closely allied workers under the motto: "From reciprocal complaints--to reciprocal aid." And at first the labor rivalry between the loggers and the railroaders gathered force. Its results were added up on a quarterly basis, and they were published in our newspapers.

But in time, noted I. Samuyllo, an instructor in the Central Committee of the trade union of workers in the timber, pulp and paper, and wood processing industry, this good beginning began to die down, unfortunately. And one of the reasons for this, as it was explained, lies in the fact that the managers of a number of the enterprises do not participate sufficiently in developing the competition. They somehow consider this to be the business only of the trade-union organizers. But who, if not the directors of the timber industry enterprises and the chiefs of the stations should be concerned, let's say, about introducing the experience of the leading workers? Take, for example, the non-uncoupling method of loading timber, as skillfully employed by the workers of the Luninetsles Association and the Lyushcha Station of the Belorussian Railroad. Here it takes only 20 minutes to load a car.

But where has this experience been repeated? This very same thing could be said about the dissemination of the Lvov method. It is being applied by only a third of the logging enterprises and the stations adjoining them.

Nor is everything in good order with regard to providing incentives. In due course a directive was issued by the Ministry of Railways on awarding bonuses to transport workers for reducing the idle time of cars at rail sidings. For some reason this has now been forgotten about.

And so the "roundtable" discussion has shown that workers in closely allied fields do not have many opportunities to speed up the timber-freight conveyor. Improvement of haul planning, the widespread introduction of bundling and main-route loading, increasing the degree of technical equipment at the transport workshops, the business-like utilization of specialized rolling stock--all this is in their hands. All we need is a common, targeted effort at shock work, beginning with the very first days of the new year, aimed at strengthening business-like contacts and reciprocal aid.

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RAILROAD REPAIR FACILITIES ALSO SUPPLYING CONSUMER GOODS

Moscow GUDOK in Russian 10 Nov 83 p 1

/Article by G. Grandova: "Goods for the People Are a Common Concern--Railroad Transport Enterprises Are Expanding the Output of Items for Cultural, Everyday, and Economic Purposes"/

/Text/ Major repair of a locomotive--whether diesel or electric--as well as a passenger or freight car, electric car, or other equipment is a labor-consuming matter. In solving this problem, the groups at many transport plants have manifested inventiveness and a spirit of enterprise in order to set up in these same areas the production of items for cultural, everyday, and economic purposes.

....In Zaporozh'ye, following after a restored electric locomotive, a truck drives out of the plant gate, loaded with lovingly packed children's sleds. At the Ulan-Udensk Plant, whose output is defined by its name--Locomotive and Car Repair--a section has been organized for producing Bayarma electric waffle irons. In Leningrad's furniture stores one can hear people asking for children's cribs produced by the October Electric Car-Repair Plant. In almost every city you will see on the store shelves spades, hoes, rakes, and various other kinds of gardening tools, produced by the plants of the transport industry. And, in all, the enterprises of railroad transport produce 600 brands of consumer goods. These include furniture, tools, kitchen utensils and dishes, auto accessories, and a great deal else. The lion's share of this output--78 percent--is accounted for by plants engaged in repairing rolling stock and producing spare parts.

The decree of the CPSU Central Committee and the USSR Council of Ministers, entitled "On Additional Measures for Improving the Supply of Consumer Goods to the Population During the Years 1983--1985," states that expansion of the service sphere within the complex of the Food Program comprises the central part of the social program approved by the 26th CPSU Congress. And the railroad transport enterprises are making their own contribution to the solution of this very urgent problem. Since the beginning of the year they have fulfilled the plan for the output of consumer goods by 117 percent.

Workers, engineers, and technicians engaged in the production of these items are persistently working to expand the assortment and to improve its quality. The Permanent Departmental Commission of the Plant Main Administration listens to

reports from the enterprises and approves the pilot models, which are then put into mass production. During the current year the assortment is being renovated, and 60 new items are being developed. Special sections are being organized and expanded for producing consumer goods at the Smelyansk EMRZ /Electro-Mechanical Repair Plant/, the Rostov ... ERZ /Electric Car-Repair Plant/, the Dnepropetrovsk Switch Plant, and the Tambov VRZ /Car-Repair Plant/. At the enterprises of the Plant Main Administration 18 items have been attested as belonging to the prime category.

The plants situated in the Ukraine take part in the republic-level fairs, where their products are highly esteemed by the trade organizations, and contracts are concluded for mass production.

In Perovo an exhibit of consumer goods produced by the transport enterprises will soon open on the territory of the Main Plant Administration's Planning and Design Bureau. This will constitute a unique account of what is being done to implement the decree of the CPSU Central Committee and the USSR Council of Ministers with regard to increasing the output of consumer goods. Most of the models to be exhibited here are made at plants engaged in repairing rolling stock and producing spare parts. But, of course, ranging alongside of their products could have been items from those car and locomotive depots which have so far not participated vigorously enough in this matter. Moreover, each of them has the potential to start up production of items for the mass market. This is a common task--to produce consumer goods in mass demand--and it must be carried out jointly.

2384
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BRIEFS

NEW FACILITIES AT KOLOMNA PLANT--Kolomna (Moscow Oblast)--A new production complex 16,000 square meters in area has been commissioned at the Kolomna Diesel Locomotive Plant. The shop is equipped with powerful welding machines which guarantee top-quality work. Also to be produced here are parts for a new locomotive of 6,000 hp in one section. [Text] [Moscow TRUD in Russian 21 Dec 83 p 1] 12258

SUBWAY TEST OF NEW MOTOR--Leningrad, Jan 8--An experimental railcar with an asynchronous motor has been successfully tested on one of the lines of the Leningrad metro. The trains now in use on all lines of the Leningrad metro are equipped with direct current electric motors. These have a collector and a brush apparatus and need a complex contact system to function properly. Frequent starting and braking, as well as speed regulation, are all effected by abrupt switching which leads to excessive consumption of electricity. The situation called for the creation of an underground train with a more reliable traction motor. An initiative group of engineers headed by deputy chief of the Leningrad metro, Candidate of Technical Sciences V. Yelsukov, and working in conjunction with scientists and specialists from the Leningrad Institute of Railroad Engineers and the Moscow Dinamo association, created and tested an experimental car and developed the engineering project for an experimental train. "Trains with asynchronous drive," says V. Yelsukov, "can save up to one fourth of the electricity used for propulsion." Testing continues [By PRAVDA correspondent] [Text] [Moscow PRAVDA in Russian 9 Jan 84 p 2] 12258

BACKUP BRIDGE--Leningrad--Bridge unit No 11 of the Mostostroy-6 construction trust has begun the construction in Leningrad of a new bridge which will link the banks of the Neva right next to the old Finland railroad bridge. The erection of the new bridge is dictated by the need to handle the ever-increasing movement of railcars from the Leningrad-Moscow to the Leningrad-Finland sections of the October Railroad. The old bridge has been in service for 80 years now. It has become too "small," slowing down intensive train traffic between the stations of Leningrad-sortirovochnyi-Moskovskiy and Dacha Dolgorukova. That is why the Leningrad Gorispolkom decided to erect a new backup railroad bridge which will be an exact replica of the old one. At present construction teams from Bridge unit No 11 are at work on both banks of the Neva. On the left

bank they are driving piles, on the right--pouring earth for an embankment to be built instead of a trestle. The bridge builders have another job to do as well--bring to completion the capital reconstruction of the old bridge so that train traffic over it will not be slowed while work on the new project is in progress. [By V. Petrov] [Text] [Moscow GUDOK in Russian 18 Jan 84 p 3] 12258

STEEL INSTEAD OF COPPER--Working in cooperation with enterprises of the USSR Ministry of Ferrous Metallurgy, the All-Union Railroad Transport Science and Research Institute has developed and introduced to the electric railways a multiwire bimetallic steel-aluminum wire. This makes it possible to save on copper which is short supply. On a double-track stretch of line one thousand kilometers long, its expenditure for overhead contact wire is reduced by five hundred tons. Installation of the bimetallic steel-aluminum contact-suspensor cable is done with the aid of newly-created fittings. The Moscow and other railroads hae already installed two thousand tons of the bimetallic steel-aluminum wire. [Text] [Moscow GUDOK in Russian 1 Feb 84 p 2] 12258

NEW SUBWAY LINE IN TASHKENT--Tashkent--Construction is in full swing of the second stage of the metro in the capital of Uzbekistan, a 5.6 kilometer line from Navoi station to Tashkent station. Five intermediate stations are being erected here. The tunnels along the entire stretch are ready. At this point the builders are busy laying the permanent way at the Aibek station. "For the first time in the history of Soviet subway construction, we are installing a quakeproof structure of precast reinforced concrete blocks," says V. Levin, party committee secretary of the Tashmetrostroy construction trust. "This has allowed us to reduce the consumption of monolithic concrete to a minimum and raise labor productivity by 21 percent." The station has been cleared by a state commission who gave it a rating of "excellent" and recommended the method here employed to other cities. The workers of the trust pledged to put the line into operation fourteen months ahead of schedule. The new stations will open their doors to passengers at the time of the 60th anniversary of the Uzbek SSR and the CPUz which will be celebrated in October of this year. [By A. Spiridonov, correspondent, SREDNE-AZIATSKAYA MAGISTRAL'] [Text] [Moscow GUDOK in Russian 7 Feb 84 p 3] 12258

NEW RAIL LINE--Tbilisi--Regular passenger traffic has begun on the new Marabda-Tetri-Tskaro section of the Transcaucasian Railroad. Two electric trains daily ply this section of the Marabda-Akhalkalaki line now being built, leaving at a time passengers find convenient. The new line will link the various regions of Georgia with the republic's mountainous south. [By S. Babayan] [Text] [Moscow GUDOK in Russian 8 Feb 84 p 4] 12258

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MARITIME AND RIVER FLEETS

RIVER FLEET COLLEGIUM SCORES NORTHWEST, LENA UNITED PERFORMANCE

Moscow VODNYY TRANSPORT in Russian 25 Feb 84 p 3

[Unattributed article: "In the Collegium of the RSFSR River Fleet Ministry"]

[Text] The Collegium of the RSFSR River Fleet Ministry examined the question of the Northwest Shipping Line's performance for 1983. It was noted that, in spite of definite positive results in the line's production activity, the level of management of the line's operational and economic work has weakened. In 1983 the plan for a number of items on the cargo list was not fulfilled, nor were the fixed indicators for the gross work productivity of all aspects of the fleet. There are serious defects in the fleet's repair organization and its combined service system. The quality of cargo transport is not at the proper level. The line is taking insufficient measures to prevent damage to the fleet and strengthen work and production discipline.

Attention was devoted mainly to questions of the line's economical work. Last year it did not fulfill the basic economic indicators: the profit plan and tasks to increase labor productivity and reduce transport costs.

Control and inspection work has considerably weakened. There are also defects in the system of execution control and inspection. The attention of the line's management was drawn particularly to the necessity of raising the level of economical work and putting internal reserves to work in all aspects of the line's activity.

It was suggested to the head of the Northwest Shipping Line, V. N. Fomin, to take exhaustive measures to induce the proper order in economic and financial activity.

Having examined the question of the progress of the fleet's preparation for navigation in the Lena United Shipping Line, the Collegium noted that the situation with the fleet's repair for the 1984 navigating season in the Lena basin needs improvement. It was suggested to the line's management--V. A. Mineyev and V. N. Smerdov--to eliminate defects in the organization of ship repair and involve the fleet's entire working group in preparing for navigation. Specific ways to eliminate defects and aid the shipping line were noted in the adopted solution.

A number of other questions were discussed at the meeting.

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MARITIME AND RIVER FLEETS

RIVER FLEET COLLEGIUM CONCERNED ABOUT PORT PERFORMANCE, OTHER ISSUES

Moscow VODNYY TRANSPORT in Russian 6 Mar 83 p 3

[Unattributed Article: "In the Collegium of the RSFSR River Fleet Ministry"]

[Text] At its last meeting, the Collegium of the RSFSR River Fleet Ministry examined the question of steps to intensify loading-unloading work and reduce standstills in ports.

It was noted at the meeting that the Main Port Authority is taking inadequate steps to intensify loading-unloading work and reduce ship idle time at ports, as a result of which, in 1981-83, these indicators lagged behind those of the established plans.

Attaching importance to the speedup of tonnage processing as one of the basic factors of more effective use of the transport fleet, the shipping lines, ports and respective chief directorates of the ministry were given the task of realizing a complex of organizational and technical measures for improving port operations, introducing new technology and superior work methods and equipping ports with highly productive transloading machines.

The Main Port Authority's attention was drawn particularly to the necessity of taking steps aimed at speeding up handling of the transit fleet, primarily of large-capacity pushed barge trains, at the clientele's ports and berths.

At the meeting the Collegium also discussed the question of improving the quality of preparation of specialists at the Leningrad Water Transport Institute. It was noted that the institute has worked specifically to improve the instructional and educational process, improve the preparation of specialists, and fulfill the planned tasks for producing cadres in scientific research.

In addition, while this question was being discussed, existing defects and oversights in work were pointed out to the institute's rector. The necessity of taking more effective measures to strengthen the institute's graduates in production was impressed upon the rector of LIVT [Leningrad Water Transport Institute], Mr Legostayev, and chief of the MRF's [River Fleet Ministry] Main Directorate of Cadres and Educational Establishments, Mr Lobantsev.

Other questions concerning the branch's economic activity were also discussed at the meeting of the River Fleet Ministry Collegium.

12421
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MARITIME AND RIVER FLEETS

INCREASED NAVIGATIONAL USE OF SMALLER WEST SIBERIAN RIVERS URGED

Moscow RECHNOY TRANSPORT in Russian No 12, Dec 83 pp 12-13

[Article by V. Zachesov, candidate in technical sciences (Novosibirsk Institute of Water Transportation Engineers): "Put the Small Rivers of Western Siberia to Navigational Use"]

[Text] Freight shipments for the West Siberian Petroleum and Gas Complex are carried out basically by river, rail, and maritime transport. The proportion of truck and air transport is negligible. Total shipments in 1981 came to 36.3 million tons, and of this amount around 56.2 percent was accounted for by river transport, 43 percent by rail transport, and 0.8 percent by maritime transport.

In 1985 freight shipments to meet the needs of the West Siberian Petroleum and Gas Complex will increase by 64 percent compared to 1980. By the end of the 5-year plan the proportion of river transport will come to 53 percent of total shipments, rail—45.4, and maritime—1.6 percent. As a result of the development of rail transport, the river fleet's share in the total amount of shipments will decrease somewhat. However, compared to 1980, in 1985 the amount of river fleet freight shipments will increase in absolute terms by 45 percent.

The extensive network of river routes provides the potentiality for the establishment of transportation communications with the most remote and inaccessible deposits. This is contributed to by the large number of small rivers. In most cases shipments on them are the basic and even only form of transporting mass freight for the provision of the region's constantly developing productive forces.

At the present time there are 63 rivers within the boundaries of the Ob-Irtysh United Steamship Company which belong to the category of small rivers. Their length comprises 58.7 percent of the total length of the basin's waterways, while on the territory of Tyumen Oblast they represent more than 70 percent. At the present time 22 rivers have been opened up for navigation.

The proportion of shipments on small rivers in the steamship company comes to 30-32 percent. Research conducted by the Novosibirsk Institute of Railroad

Transportation Engineers on the developmental prospects of freight shipments on these waterways shows that the amount of shipments here will continually increase.

This circumstance requires a more careful attitude toward the opening up and use of small rivers for transportation, the organization of regular navigation on them, the planning and management of the fleet's work, and also the strengthening of the material and technical base of river transport.

Freight shipments on small rivers have their own special characteristics, and require a specialized low tonnage fleet. Their performance was not always in keeping with the use of the general methods of planning and organizing the work of the fleets, and also of managing transportation equipment.

The size of the low tonnage transportation fleet in the steamship company is insufficient to fully meet constantly growing needs. On account of the insufficiency of the low tonnage fleet, during the 1982 navigation period, for example, the steamship company was not able to perform 33 percent of its freight shipments on small rivers. If the current rates for replenishing the vessel pool for small rivers in this basin continues during the future, then during the 12th Five-Year Plan the failure to perform shipments will decrease to 40 percent. Frequently the replenishment of the steamship company's low tonnage fleet does not even compensate for the natural loss of vessels.

At the present time the fleet of the Ministry of the River Fleet and transportation equipment belonging to other departments are operated on the basin's riverways. The proportion of freight shipments on departmental fleet vessels is very substantial. For example, in 1981 the vessels of only four organizations—the Main Administration for the Petroleum and Gas Industry in Tyumen Oblast, the Main Administration for Geology in Tyumen Oblast, the Tyumen Gas Industry, and the Territorial Production Distribution Administration of the Ministry of Petroleum and Gas Construction—carried 2.6 million tons of diverse freight, which came to more than 40 percent of the total shipments performed on the small rivers of this region.

The departmental fleet in the basin has 1,472 transportation vessels with a total freight capacity of 179,000 tons and with a total power of 66,000 kilowatts. The share of the low tonnage fleet of the Ministry of the River Fleet in relation to the departmental fleet is 29 percent. The nucleus of the departmental fleet is made up of pusher tugboats (37 percent), non-self-propelled dry cargo tonnage (38 percent), cargo motor ships (10 percent), and non-self-propelled tanker tonnage (16 percent).

In the Ob-Irtysh United Steamship Company the low tonnage fleet is distributed in the following way: dry cargo self-propelled—5.6 percent, non-self-propelled—36, tanker self-propelled—3, non-self-propelled—7.4, and tugboats—48 percent.

The qualitative composition of the fleets of the outside organizations and, especially, their operations indicators are substantially inferior to the low tonnage vessels of the steamship company. Thus, the average freight capacity of the departmental self-propelled cargo fleet is 52 percent lower than that

of the vessels of the Ministry of the River Fleet, the average power of departmental tugs is 9.1 percent lower, and the average freight capacity of departmental dry cargo barges is also approximately 9.1 percent lower. A large percentage of the departmental fleet is physically obsolescent and outdated. In the Main Administration for Geology in Tyumen Oblast 19 percent of the vessels were built before 1961, 29 percent during the period 1961-1970, and 52 percent--from 1971 through 1981. Most of the departments lack appropriate repair bases and for this reason their vessels are in worse technical condition than the analogous vessels of the Ministry of the River Fleet.

With most proprietors the work of the fleet is organized by technical operations shops which are located in the areas of freight accumulation points. The freight is delivered to the accumulation points by railroad or by the fleet of the Ministry of the River Fleet. The departmental fleet is used for delivering freight directly to consumption sites. However, in addition to this, it sometimes performs shipments on main riverways over a distance of more than 1,000 kilometers.

The planning, organization, and management of the work of this fleet is performed by its proprietors on the basis of departmental tasks uncoordinated with related organizations, including the steamship company of the Ministry of the River Fleet. This kind of situation gives rise to irrational freight shipments, excessive empty runs by vessels, and unjustified expenditures of time and means for the delivery of freight. The plans for the use of vessels are not properly substantiated. Most of the departments do not have navigation plans for operations work, and reporting by vessel crews is poorly set up. As a result, the work indicators of the department fleet are much worse than the analogous ones of the fleet belonging to the steamship company.

During the 1981 navigation period more than 1,500 units of the low tonnage transportation fleet were operated in Tyumen and Tomsk Oblasts, and around two-thirds of them were departmental. The work indicators of the latter were seven-eight times lower than the analogous ones of the fleet of the Ministry of the River Fleet. The steamship company performs substantially more shipments with a smaller sized fleet than all of the non-transportation organizations of the basin.

Bringing order to the planning and organization of the operations and to the management of the low tonnage fleet in the basin is an important task at the current stage. It is necessary to coordinate the work of the fleets of the individual departments with the basic tasks of river transportation, and to bring the efficiency of their use to the level of that of similar vessels of the Ministry of the River Fleet. Toward this end, it would be useful during the navigation period to transfer the entire transportation fleet which is on the balance on non-transportation organizations to the operational subordination of the steamship company along with its shipments plan. The organization of the work of this fleet should be performed in accordance with the uniform requirements and normatives of the Ministry of the River Fleet.

At the initial stage the technical servicing of the fleet, and also its maintenance should be left to the non-transportation organizations. As the material and technical base of river transport grows stronger, the floating

transportation equipment should be transferred to the balance of the steamship company.

Similar measures should also be carried out in relation to non-general use piers. It would be wise to apply the existing practice of handing over transloading equipment to the operational subordination of ports for the navigation period to all of the basic non-general use piers of the basin.

It is generally known that a substantial part of the operational time of the transportation fleet is expended for the performance of loading and unloading operations. It is obvious from this fact that the efficiency of shipments of small rivers and the best utilization of the fleet is inseparably connected with the technical state of the piers and the level at which they are supplied with mechanisms. Unfortunately, a large number of the piers on small rivers are natural shorelines or wooden pile piers. Their equipment supply level continues to be extremely low--floating cranes with a load capacity of three-five tons, and caterpillar cranes presently make up their basic mechanization equipment. At a number of points unloading is performed manually. The situation is made even more complicated by the fact that the basic mass of the freight is processed at non-general use piers which belong to different departments. The utilization of the existing mechanization of these piers is low. The piers are operated only during the daytime, standing idle during non-work days and holidays. Each department establishes its own regulations on the organization of labor and work time, its own work safety conditions, and its own restrictions on the use of mechanization depending upon weather conditions.

An analysis of the work of the transloading equipment in the organizations of the Main Administration for the Petroleum and Gas Industry of Tyumen Oblast shows that idle time for this equipment resulting from one-shift operations at the piers comprises 58.9 percent of the total transloading equipment idle time in this department.

There is no coordination among the departments of the use of their transloading equipment. As a result of this, even within the borders of a single rayon it is impossible to make use of existing transloading machinery in a mobile manner.

For this reason, a correct decision has been made to build large-capacity united piers for the various departments outfitted with highly productive equipment. However, money and a considerable amount of time is needed to realize it. In addition, there are a large number of unloading points with a small amount of freight turnover at which it would be economically inexpedient to build capital installations.

As a result of this, the construction of temporary pier installations is becoming very important. For remote areas which lack construction materials and have limited labor power resources the question of the use of ice as a construction material for building temporary piers is becoming an important one for the opening up of small rivers. Definite experience has been accumulated in Siberian areas in the construction and operation of ice installations (Khatanga, Dudinka, Igarka, Barnaul, Krasnoyarsk, Minusinsk, Irkutsk):

layered poured ice is used as a dam for small rivers and for ice levees for the planned wintering of the fleet and for piers.

The construction of installations made out of ice can be performed rapidly and without especial expenditures. According to the data of the Novosibirsk Institute of Water Transportation Engineers, it would take a team of three workers up to 40 days to build an installation 8 meters high with dimensions in the area of 10 x 50 square meters. Toward the end of the warm period of the year ice pier installations are capable of maintaining negative temperatures of one-two degrees centigrade. This kind of work can be performed by practically any freight receiver.

In order to shorten fleet standing time on small rivers the middle echelon of our sailing personnel should be taught how to work with transloading equipment, a system of material interests should be worked out for this category of workers, and they should be given admission to the transloading machinery and mechanisms of clients. With this done it would become possible to reduce interruptions in the processing of vessels to a minimum, and also to perform round-the-clock work, including work on non-work days and on holidays. Operations expenditures for the fleet will increase in this case, but their increase is infinitesimally small compared to the decrease in the cost of shipments resulting from the increase in the carrying capacity of the fleet.

The existing system of the planning, accounting, and evaluation of the work of steamship companies on small rivers does not stimulate the development of this form of shipments. The more intensively river workers put new sections of small rivers to use and increase the amount of shipments, the more difficult it becomes for them to fulfill their assignments on reducing the cost of shipments and increasing labor productivity. The overall operational and economic indicators of the steamship company's fleet's work become worse in this case.

For this reason a number of economically expedient and necessary measures are not being widely introduced on small rivers. Almost 10 years ago the Novosibirsk Institute of Water Transportation Engineers substantiated the effectiveness of introducing flexible crews and, above all, on small rivers. Science has found the complete solution to this problem, and the technical aspect has also been worked out, but on the small rivers of Siberia isolated flexible crews are being used and still on an experimental basis.

It is necessary to develop the kind of system of planning, accounting, and work evaluation for the fleet on small rivers with which steamship companies would themselves seek out the possibility of increasing shipments on small rivers which are so needed by the economy. The development of a system of this kind should, in our opinion, begin with separate planning and accounting for the shipments and operations of the fleet on small rivers and, first of all, in the Ob-Irtysh United Steamship Company.

In order to fulfill intense assignments for bringing freight onto small rivers, in recent years the practice of developing and implementing individual special-purpose programs has been finding a wide application in the steamship companies of the eastern basins. A program defines a system of

measures coordinated for resources and performance time, unites and concretizes the tasks of all of the enterprises and organizations participating in the implementation of the measures, and defines the forms of scheduling and management and the persons responsible for performance execution. The realization of such a program is achieved by means of the coordinated management of freight delivery to small rivers by operations staffs or councils at the rayon or oblast level with the participation of interested enterprises and organizations. The Ob-Irtysh Basin possesses the necessary preconditions for organizing the delivery of freight to a number of small rivers through the development and use of special-purpose programs.

In addition to the funds of the Ministry of the River Fleet, it is necessary to enlist (on the basis of share participation) the capital investments of interested ministries and departments for the preparation of small rivers and for their active utilization for freight shipments. Many rivers or sections of them are, in essence, approaches to deposits or other industrial objects and, for this reason, they should be developed above all at the cost of the ministries and departments which have an interest in the organization of the freight shipments.

The wide use of small rivers as transportation routes will make it possible to accelerate the development of the petroleum and gas extracting branches of the economy.

2959
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MARITIME AND RIVER FLEETS

LENGTHENED NAVIGATIONAL SEASON URGED FOR OB-IRTYSH BASIN

Moscow RECHNOY TRANSPORT in Russian No 12, Dec 83 p 19

[Article by V. Lyashchenko, captain of the ice-cutter "Captain Zarubin": "Under Ice Conditions"]

[Text] The first steps to lengthen the navigation season in the Ob-Irtysh Basin were made in the 1960s when freight shipments to the petroleum and gas areas of Tyumen Oblast began to develop in an intensive manner. Already at that time the river workers of the Irtysh were striving to make maximum use of the autumn period of the navigation season. Frequently work of this kind came to a successful conclusion: after delivering all of the freight claimed for shipment to the freight receivers, the fleet's crews succeeded in returning to their bases. But often on long water routes, from northern points to the plants and registry bases, ships' crews had to work in the ice, and sometimes remained to winter en route in severe cold. Many river workers remember the autumn of 1966 when dozens of self-propelled cargo and tug vessels wintered in the Tazovskiy and Ob Inlets, in Salekhard, and other points. An especially severe wintering period was experienced by a large group of vessels in Novyy Port which the river caravans were helped to break through to by the maritime ice cutter "Yu. Lisyanskiy."

Until the fall of 1978 the Irtysh Steamship Company possessed only one ice-breaker, the "Ob." During its long years of service (since 1964) this vessel's crew performed an enormous amount of work in the forced opening of roadsteads and river sections, and in providing for the accompaniment of vessels through the ice during the autumn and the safety of the fleet during the spring period. The crew has quite a few rescue operations to its credit. A rare incident occurred in the winter of 1974 in the Ob Inlet. In the fall a floating crane had been left to winter in the Kamennyy Bay. In November, as a result of winds and the movement of the ice, the crane was carried out of the bay and it began to drift with the ice northwards. The drifting continued throughout the winter, and in the spring of 1975 the crane turned up in the neighborhood of Tambey Bay. During this period the compaction of the ice is at its greatest here, and the crane was threatened with destruction. After completing its accompaniment of transport vessels into Tazovskiy Inlet, the crew of the ice-breaker "Ob" succeeded in bringing the floating crane out of the danger zone and tugging it into Salekhard. In the autumn of

1975 the ice-breaker's crew gave help to geologists' vessels which had wintered in the neighborhood of Novyy Port and Cape Setnaya. In the spring of 1977 an ice movement took almost the entire fleet of the Nizhnevartovsk Port out into the river. The ice-breaker "Ob" came to the rescue and before the beginning of the ice-gang succeeded in bringing all of the vessels into the backwater. Every year, during the difficult spring and autumn periods of the navigation season, the crew of the ice-breaker "Ob" comes to the assistance of the transportation fleet, and during the summer it tugs vessels in rivers and along seacoasts.

The ice-breaker's captain, Captain First Class N. Vlasyuk, has shown a great deal of initiative in mastering the difficult work in the ice on the rivers of our basin.

During the 1970s a large amount of modernization work was performed on the ice-breaker "Ob." Fundamental improvements were made in the crew's living conditions, the heating system was completely replaced, and a refrigeration unit for keeping produce was installed. The ship escorts received new navigation instruments--the "Mius" radar, an acoustic depth finder, a hydrocompass, and the "Korabl'" Radio Station. During the period of capital repairs a more powerful auxiliary diesel generator was installed on this ship, and along the entire hull the wooden rubbing strake was replaced by a metal one. Direct participation was taken in this work by the Senior Maintenance Engineer Yu. Lapin and the senior assistant captain and, later, captain of the ice-breaker "Ob" V. Budovskiy--now the fleet commander who is well known in the basin.

In recent years the country's river fleet has been reinforced by new line ice-breakers. One of them, the "Captain Plakhin," arrived in the Ob-Irtysh Basin in the fall of 1978. In April of the following year the ice-breaker's crew began to open up the Irtysh and the Ob on the 1100-kilometer Tobol'sk-Nizhnevartovsk sector. The beginning of the work coincided with extremely severe conditions: low water levels, thick ice with a heavy snow cover, and severe cold. Despite exceptional difficulties, the ice-breaker's crew successfully performed its tasks. The artificial opening of the rivers made it possible for the river workers to begin the navigation season in this sector of the basin six to seven days earlier than usual. Before the end of May the crew had opened up the 1000-kilometer lower and mouth sectors of the Ob.

A large amount of work was performed accompanying the transportation fleet in the Ob-Tazovskiy Inlet. From 9 through 19 July the "Captain Plakhin" along with the ice-breaker "Ob" accompanied dozens of ships which delivered more than 50,000 tons of diverse cargo to remote points--Krasnosel'kupsk, Urengoy, and Tarko-Sale. Thanks to the artificial opening of the Ob-Tazovskiy Inlet, the river workers began the northern navigation season 12 to 15 days earlier than usual. It has to be emphasized that the loaded caravans came up to the piers on spring high waters and stood for unloading without flat-bottomed barges, as had been done earlier.

In the fall the collective of the "Captain Plakhin" moved ships from the Yenisey to the Irtysh, and then accompanied more than 100 ships to southern repair and standing points.

On the basis of the results of the 1979 ice navigation season, by order of the Minister of the River Fleet the crew of the ice-breaker was given a commendation. Excellent work was done by the Senior Maintenance Engineer Yu. Lapin, his stand-in N. Giris, the Senior Electrician F. Kuz'minykh, and the First Assistant Electrician V. Mamayev. All of them are highly qualified specialists and they succeeded in a brief period of time in mastering a large amount of new equipment.

As a result of the performance of guaranteed repairs on a whole series of ice-breakers, since 1981 our crew has been working on the same type of ice-breaker as its own, the "Captain Zarubin." The experience in operating powerful river ice-breakers which has been accumulating during these years has shown that, despite their increased displacement, they are able to be used for the forced opening of the Ob, Irtysh, Tobol, Vakh, and Severnaya Sos'va Rivers with a total length of around 4,000 kilometers. Excellent results have been received in accompanying the transportation fleet in the Ob and Tazovskiy Inlets. The work of such vessels is especially effective when they are paired with less powerful ones of the "Ob" type which can be operated on the Novyy Port-Cape Kamennyy sector, while the "Captain Zarubin" can be operated on the Cape Kamennyy-Cape Poylovo sector.

Possessing quite good seaworthiness, a powerful power plant, and special equipment, the new ice-breakers are capable of performing various kinds of rescue operations. Thus, in October 1978 our crew freed a floating crane which had been thrown onto a shoal during a storm at Cape Kamennyy.

A considerable amount of experience in prolonging the navigation season and utilizing the fleet under ice conditions has been gained in the Ob-Irtysh Basin. Rich practical experience is possessed by I. Izvekov--the captain-instructor of the ice-breaker fleet,--and by the Captain's Instructors V. Tokapev, N. Talako, and V. Shcheglov, by the transportation vessel captains N. Vlasyuk, M. Listopadov, V. Mal'tsev, N. Gaydamak, L. Sokolov, and A. Novoselov, and by other captains and engineers, especially of the fleet's Tobol'sk Maintenance and Operations Base whose crews are the last to conclude the navigation season on the Irtysh.

In view of the fact that the depths of most of Siberia's mainline rivers are limited, during the 11th Five-Year Plan it is planned to reinforce the steamship company with ice-breakers with a capacity of 3,240,000 kilowatts, a length of 74.2 meters, a width of 16.6 meters, and a maximum displacement of 2.5 meters. These ice-breakers will make it possible to use most of the main routes during the prolonged navigation period, and like the ice-breakers of the "Captain Zarubin" type, they will also be able to operate under maritime coastal conditions as rescue vessels and as tugs.

With transportation vessels of the "Sibirskiy" type which have been adapted for operations under ice conditions and with a sufficient number of ice-breakers it will become possible to substantially increase the prolonged navigation period and ship cargoes during the winter period with an ice thickness of 30-40 centimeters. Now it is necessary to generalize the experience which has been gained, and to work out recommendations and optimal

variants for the use of the fleet, the ports, and the other subdivisions of the steamship company under ice conditions.

The development of scientifically substantiated measures to prolong the navigation season is essential for our basin for the additional reason that the ice-breaker fleet operates under ice conditions practically throughout the entire navigation season. Beginning with the opening of the rivers in the southern latitudes in April and the escorting of the fleet through the ice in the Zapolyar'e, the ice-breakers finish their work in July, and sometimes in August. As a rule, at the end of September a new ice formation begins in these regions.

2959
CSO: 1829/198

MARITIME AND RIVER FLEETS

LIGHTER BUILDING FOR FAR EAST STEAMSHIP COMPANY

Moscow MORSKOY FLOT in Russian No 12, Dec 83 pp 6-7

[Article by L. Pustovoit: "The Lighters Are Under Contruction"]

[Text] The Sovetskaya Gavan Plant of the Ministry of the Maritime Fleet was one of the first in the Far East to set up series production of lighters. Now it is fulfilling a large order for the Far East Steamship Company. In 1983 it plans to produce 10 lighters. Another vessel was delivered recently.

The lighter is an airtightmetallic container, 13.7 meters long, 9.5 meters wide and 3.965 meters high. It is designed to haul various cargo and has a carrying capacity of 376 tons. Lighters of this type are transported on special lighter-carrying ships of the "Aleksey Kosygin" type. Eighty lighters are placed on them.

Assimilation of the new shipbuilding project at the plant caused many difficulties. It was impossible to assemble a lighter exactly according to design using the existing equipment in the slipway. Much had to be changed. They actually started from scratch.

Three teams, under the leadership of N. Kiselev, V. Betenev and V. Kulinchenko, were selected for work on the new shipbuilding. One of the main distinctions in the lighter assembly process is maximum precision. If the frame is even a millimeter more or less than the planned parameters, the lighter is no good. It will be impossible to fit it on the ship.

The teams mastered the new work in short order and are now working practically flawlessly. They have been equal to their commitments, in which they projected to fulfill a three-year target of the five-year plan by USSR Construction Day, considerably ahead of schedule. On their labor calendar, that is July 1984. They managed to exceed their commitments due to a record labor productivity--the average output norm is 180 percent.

All three teams are fighting for the title of collectives of good working conditions with high standards of production and immaculate order and

are participating in the socialist emulation in honor of the 25th anniversary of the communist labor movement. Early this year the N. Kiselev's team was given the title of "Communist Labor Team."

The average age of the workers on these teams is not over 30. There are many beginners. In 1983, the composition of the teams was replenished with graduates of vocational and technical schools. The young workers feel confident in the collective and although the work here is not the easiest, they are mastering their specialty fairly well. Of course, the older comrades help them out, primarily the team leaders. They have much experience. N. Kiselev has been working there for 30 years and V. Betenev and V. Kulinchenko--over 25 years.

The shipbuilders cannot manage without the welders. The team of welders headed by G. Gavrushchenko has made an excellent effort. An innovation of the chief of the bureau of production preparation, V. Mal'chenko, has enabled them to do welding of the lighter's double bottom quicker and with higher quality. The economic impact of its introduction was over 2,000 rubles.

The new shipbuilding program at the plant is increasing every year. There are an additional three lighters to be built in 1984.

Preparations are now under way for assimilating a new tug project.

All this requires the shipbuilders to improve production technology, labor organization and creative engineering concepts.

12567
CSO: 1829/180

INSTITUTE DESIGNING SAILS FOR CASPIAN TANKER

Kiev PRAVDA UKRAINY in Russian 9 Feb 84 p 4

[Article: "Winged Sails"]

[Text] A design to fit out a nearly 5000-t draft dry-cargo ship with auxiliary sails was sketched at the Nikolayev Shipbuilding Institute for the Caspian Shipping Line. Soon silvery sails will be working in the Caspian winds. This event is interpreted by the scientific director of the Nikolayev Shipbuilding Institute's Laboratory for Research on Ships with Ecologically Safe Engines (LISED), Professor Yu. S. Kryuchkov.

[Kryuchkov] Interest in the rebirth of ships with sails is growing from year to year. Several foreign coastal motor-sail ships, such as Japanese and Greek, are already in operation. Over 45 commercial firms and state organizations are working on the problem of using wind power for sea travel.

Of course, sails are no novelty. So why are they being invented? Because ancestral sails are unsuitable for today's ships. We, for example, favor hard sails of metal or plastic.

We did not arrive at this conclusion immediately. In the first stage, we created variations of draft designs of ships with wind-power equipment and studied the technical and economic bases of the soundness of their use.

The second stage of the collective's work was the creation of modern, fully mechanized rigid sails and their practical introduction on ships.

But, in order that hard sails be acceptable for use, they must have one very important quality: to be fully retractable to the deck. This is not easy to do, for metal or plastic is not a material that can be rolled into a coil. The LISED workers found several unique solutions, for which they have already received copyrights. In general, the laboratory, built on a public basis in 1977, received nine copyrights for inventions and a number of applications are still being examined. We have completed work on three scientific research subjects, have made five draft designs of sailing ships and have developed more than 20 unique designs of wind-power equipment.

Sail designs of interest are the "harmonica", "Venetian blind" and "butterfly." The latter acts as a wing when moving at sharp angles to the wind, but on parallel courses opens out like a butterfly's wings, doubling its area.

In a word, we now have at our disposal a large selection of any design of sail. Their mechanics having been verified on operating models, a test is now being prepared at MGU's [Moscow State University] aerodynamics laboratory.

12421
CSO: 1829/203

DETAILS OF NEW RIVER FRUIT-VEGETABLE CARRIERS

Moscow RECHNOY TRANSPORT in Russian No 11, Nov 83 pp 36-37

[Article by Yu. Gorbunov (Volga Amalgamated River Fleet) and Yu. Rabazov (Special Designers' Buro "Vympel"): "Fruit-Vegetable Transport Ships"]

[Text] In June and July of 1983, two leading motor ship fruit and vegetable carriers were put into service. They were built first at the Rybinsk Shipworks imeni Volodarskiy, and second at the Volgograd Works according to design 19620, developed by the Vympel Special Designer's Buro. Construction has begun of a large series of specialized vessels, the use of which will permit a significant broadening of river transport's share in the realization of industrial programs.

Motor ships of the O-pr (ice) class of the USSR River Registry are intended for the delivery of tomatoes, watermelons, and other vegetable and melon produce from the Astrakhan and Volgograd Oblasts to Moscow, Leningrad, and other river cities. Besides produce, they can transport packaged freight, packaged lumber, loose grain, and containers with a mass of up to 20 tons (including refrigerated ones).

Basic Features of the Vessel

Rated length, meters	83.6
Rated width, meters	12
Height of side, meters	3.5
Clearance from base line to unremoveable parts, meters	10.8
Freight capacity, tons	
with a load of produce and containers	600
with a load of packaged freight	1300
maximal	1520
Average draft, meters	
with a load of 600 tons	1.98
with a load of 1300 tons	2.55
with a load of 1520 tons	2.94

Capacity of the primary motors, kilowatts	2x514
Capacity of generator, kilowatts	3x100
Speed of a draft of 1.98 meters, kilometers/hour	19.5
Endurance, days	10
Crew, persons	10

The architecture of the motor ship produce carriers differs from the traditional; a superstructure with the navigation cabin in the ship's bows, dictated by the necessity of having a minimal above water clearance for passage under bridges. In addition, with this arrangement the living quarters are situated at a maximum distance from the sources of noise, vibration, and exhaust.

The distinguishing feature of the ship as a specialized motor ship produce carrier is the availability of a technical refrigeration system, which assures optimal conditions for the transportation of various vegetables and melons. The system maintains an air temperature of 8-12 degrees Centigrade in the freight hold, and keeps the humidity within the range of 80-90 percent (at external air temperatures of up to 30 degrees Centigrade). The air, cooled in four MAKZD RE/P compressor-condensor assemblies, goes directly into the cargo hold, and then it is recycled. The assemblies, arranged by twos in the bow and stern refrigerated sections, cool the corresponding bow and stern sections of the hold. Located between the superstructures, the freight hold is expanded in height to the upper deck of the superstructure at the expense of hatch coamings. Its clearances in the plan are multiples of the dimensions of vegetable and standard ISO 20-ton containers.

Waterproof hatch covering consists of two moveable covers and provides an opening of half the hold. Its strength tolerates a load of up to 10 kilogram-force/square meter. The hatch covers are raised by means of hydraulic jacks, and are moved along the hold by means of an electric winch. A hoisting crane is mounted on them, with a weight lifting capacity of 2.3 tons and a boom range of 8 meters.

Transportation of produce is provided for in special vegetable containers of the TKB-90u and TKB-67 types, which are stowed in seven or eight rows along the width and four or five rows high. Air is fed into the hold and exhausted through special windows in the bow and stern bulkheads. By means of a removeable bulkhead, comprised of two layers of rubberized fabric, the freight hold is divided into two independently cooled compartments. Loading and unloading of containers can be accomplished with cranes or electric loaders. For this ports have been provided for in the walls on each side.

VSTZsp4 carbon steel is used as the basic material of the hull and superstructure. The superstructures, wheelhouse, and inside partitions are made primarily of a frameless construction of corrugated sheets. The framework system is compound. In the midsection of the hull, the bottom panel, secondary

bottom, main and upper decks, and longitudinal walls of the freight hold are assembled on the longitudinal system, while the sides are assembled on the transverse. The transverse system is applied in the extremities for all elements of the hull.

The chief dimensions of the vessel and its draft with a load of vegetables and containers are specified with consideration to the navigational conditions in the Volga delta. The form of the hull and its hydrodynamic characteristics are checked and developed on models in a testing tank. The configuration of the stern is tunnel-like, dictated by the necessity of placing a propeller-rudder complex of optimal dimensions.

The hull of the vessel has a secondary bottom and secondary sides (the longitudinal walls of the freight hold) in the vicinity of the freight hold. Compartments between sides serve for the placement of ballast. The walls of the hold above the main deck, including the hatch coamings, are covered with thermal insulation, which is protected with sheets of an aluminum-magnesium alloy. The hatch covers are insulated on the inside. During the transport of packaged and other non-vegetable loads, ventilation windows in the facing walls of the freight hold are battened down with impermeable covers, and the flexible bulkhead is stowed under a shelter, which is located between the hatches on the upper deck level.

The twin shaft main power plant consists of 6NFDS48A-2U engines, running on diesel and motor fuel. The capacity of each engine is 514 kilowatts (700 horse power) at a crankshaft speed of 300 revolutions/minute. The torque of the engines through the intermediate and propeller shafts is delivered directly to the alloyed steel. The power plant consists of three DGR2A 100/750 and one DGA50M1-9 diesel generator, a KVA 0.63/5 automated boiler with a steam-generating capacity of 630 kilograms/hour, and also two KUP 200 boiler-utilizers with a steam-generating capacity of 180 kilograms/hour. The level of automation allows control of the power plant from a post in the wheelhouse, and operation of the vessel without a continuous watch in the engine room.

Yankel system rudders are employed, which testing shows to be more effective than semibalanced rudders, and which virtually provide manageability equal to that of a vessel with steering nozzles. Uncovering of the propellers was adopted in order to avoid the negative effects observed during the operation of vessels with nozzles under icy conditions (breakage, seizure, etc.). An electrohydraulic steering machine of the R12 type, which is controlled by means of the modernized Pechora-4-1P system, is used for the rudder drive.

The vessel is supplied with two bow bower anchors and one stern Hall anchor with a mass of 800 kilograms. A BZ windlass has been installed for the raising and lowering of the bow anchors, and a YASHZ capstan for the stern anchor.

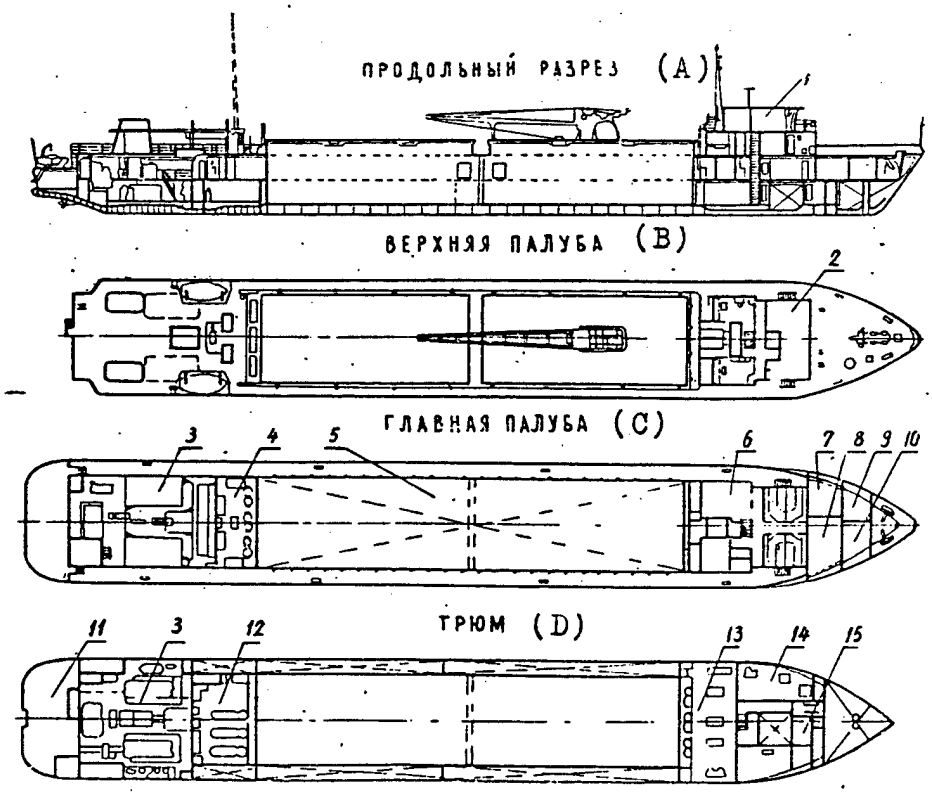
The primary means of fire fighting is a water system served by two HTSV 63/80A electric pumps, one of which is situated in the stern engine room, and one in the bow, in the auxiliary mechanism room. In addition, the stern engine room is equipped with a foam fire fighting system. The pumping out of 515 tons of

ballast over 4.5-5 hours is assured by the NTSV 63/30 electric pumps. Water containing petroleum products is collected in a 9.3 cubic meter capacity storage cistern by means of an automated engine room dewatering system. There is a 20 cubic meter capacity storage cistern for sewage.

The crew is housed in one and two-person cabins with sun screens. Their walls and ceilings are protected by modular panels of metal-base laminate, and in the working quarters and common rooms they are protected by asbosilite tiles.

The vessel is fitted with a navigational system, communications equipment, and control devices which assure safe sailing in the assigned regions.

Shakedown cruises of the motor ship vegetable carriers have confirmed design characteristics.



Key on following page

Motor ship vegetable carrier design 19620. Longitudinal cross section, deck plans, and hold:

1. Wheelhouse
2. Commanders' quarters
3. Engine room
4. Stern refrigerated section
5. Freight hold
6. Crew's quarters
7. Galley
8. Mess-room
9. Provisions
10. Refrigeration room
11. Tiller room
12. Diesel generator room
13. Bow refrigerated section
14. Drinking water preparation station
15. Laundry

Key:

A. Longitudinal cross section
B. Upper deck
C. Main deck
D. Hold

1246

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MARITIME AND RIVER FLEETS

IMPROVED ENGLISH INSTRUCTION URGED FOR RIVER, COASTAL CREWS

Moscow RECHNOY TRANSPORT in Russian No 11, Nov 83 p 14

[Article by Yu. Usov (BOP): "The Successes and Difficulties of English Language Learning"]

[Text] The mastery of English and the ability to conduct business meetings and correspondence in that language are of great importance to the professional training of the commanders of overseas sailing vessels. The correctness of decision making is highly dependent on this. On the Belomorsk-Oneg line a 3-year, 1200-hour correspondence course in English language instruction has been organized. A 24-seat language laboratory has been equipped with six tape recorders, a turntable, records and tapes of English lessons, tables, textbooks, and practical and methodological handbooks.

On the vessels there are tape recorders, tapes of lessons, and practical handbooks (navigators' English, English grammar, business English for seamen, business correspondence in marine transport, minimum English-Russian vocabulary for navigation). The trainees are regularly sent controlled written assignments in all 3 years of the correspondence training. Every trainee has a record book, and is obliged to prepare and pass 10 written exams annually, for every level, and to follow this with their oral defense. For this reason there is a monthly session, after which the student takes translation exams. In accordance with the findings of the examining committee, a 10-percent raise in the official salary is assigned for the knowledge and use of English by an order covering the entire line.

Every year between navigable periods, the line summons 60 people, with whom monthly lessons are conducted, to an examining session. As experience has shown, this kind of combination of correspondence instruction with conventional lessons gives good results, since at this time the students have the opportunity for extensive use of the technical means of instruction.

In all, 590 people are in training on the line, primarily navigators. In the 5 years of the course, 90 people have finished it, including 55 captains.

In order to make language learning more active, a procedure has been determined for the organization of shipboard exercises with all personnel. The goal of these exercises: acquisition of vocabulary, use of maritime technology,

training in the ability to conduct monologues and dialogues, practice in the oral comprehension of English, and memorization of separate elements of dialogue. Special methodological instructions and plans for the exercises are sent out to the vessels.

Demand for a knowledge of the language on the part of commanders has increased considerably. A minimum program has been worked out for first, second, and third navigation officers, which they are required to know on their assignment to the stated posts. Furthermore, they are required to complete 3-year correspondence courses under the training office of the line. With promotion to the rank of captain, a check of knowledge of English is made, covering the entire program of the indicated courses. A check is also made with the designation of the 10-percent bonus for knowledge of the language.

The staff of English teachers includes N. Ogorodova, L. Raudanen, and G. Feklova. Since 1982, it has been the practice to send them directly on board the vessels as they leave port, for checking the personnel's knowledge of the language and helping in its study.

In spite of certain successes in the organization of English language study on the line, there are essential shortcomings. Problems of reinforcing the material and technical bases of the course are resolved slowly and with difficulty, and there is a lack of training literature and the technical means. Instruction on every line is organized differently, and there is no information on the use of the latest teaching technology. Every line, as they say, "stews in its own juice." An increase in qualifications and professionalization of teachers has not been organized.

It should be noted that the graduates of river academies and even of institutes arrive on board vessels with a weak knowledge of the English language.

Apparently, the time is right for a review of the English program in educational institutions, taking into account an increase in the number of hours in the senior course and inclusion in the program of business correspondence, so that, for example, a graduate of a river academy would know English sufficiently to meet the demands of the line up to second mate. This would allow the graduates to be immediately enrolled in the third year of language instruction on the line.

12461
CSO: 1829/197

SUCCESSES OF TOMSK INDUSTRIAL TRANSPORT COMPLEX

Moscow VODNYY TRANSPORT in Russian 7 Jan 84 p 2

[Article by P. Drachev, chief of the Tomsk Port, deputy chief of the West Siberian Steamship Company, candidate in economic sciences: "The Complex's Capacities"]

[Text] The Tomsk Industrial and Transportation Complex is playing an important role in the exploitation of the petroleum and gas deposits of Western Siberia. Five years ago the Tomsk Oblast party organization established a long-term program for the development of the oblast's petroleum extracting industry. In it especial attention was devoted to the development of river shipments. There was good reason why this attention was given to the river workers. In the oblast almost 80 percent of the total shipments are accounted for by water transport. It was decided to establish a single industrial and transportation complex in the oblast which would be directed by a coordination council.

At the first stage the following went into the complex: the Tomsk Port which accounts for the basic volume of shipments in the West Siberian Steamship Company, and also the oblast's motor vehicle transport administration and the railroad station Tomsk-Gruzovoy. These three "whales" of the conveyor provide for both intra-oblast and inter-oblast shipments.

Seven organizations also became members of the complex, and then their number increased to 16.

It also became necessary to improve the structure of the river transport management. More exactly, a superfluous element was eliminated--the Tomsk Rayon Administration. Now the work of the river workers has begun to be directed directly by the Tomsk Port. Then the extensive introduction of large-capacity freight carrying units and of the group method of work by the fleet began to be extensively introduced on the main waterways. This helped to speed up shipments on the small rivers Vasyugan, Parabel', Chuzik, and Vakh. The amount of shipments here increased fivefold.

The chief task of the Coordination Council whose membership consists of the top enterprise directors headed by the deputy chairman of the oblispolkom was

the creation of the kind of managerial mechanism which would make it possible to eliminate or smooth over departmental barriers and direct all of the forces of the complex's participants toward the attainment of a common goal. A careful analysis was made of the material and technical potentialities of all of the complex's participants, and studies were made of the specialization, capacities, and special characteristics of the transportation enterprises, and of their possession of transshipment bases, transfer equipment, and rolling stock. Studies were made of the carrying capacity of the different sections of the transportation conveyor, of freight volumes, of the characteristics of the freight, and of the seasonal nature of shipments. It was important to determine the direction of the freight flows and their distance and intensity, and the capacities of the warehouse system and of the hoisting and transportation equipment.

In the following stage work was done on clarifying the capabilities of the transportation organization and coordinating them with the needs of freight shippers with regard to the products lists and the amounts of the freight, the dates of its delivery, and its unloading points. Transportation balances were worked out, as were plans for an inter-rayon exchange of the most important types of freight. Depending upon the intensity of the freight flows, the balances are calculated for two days, a week, a 10-day period, or a month. On the basis of the information which is obtained, calendar schedule plans for the work of related organizations and schemes for the continuous planning of freight deliveries are made up. In coordinating the work of all of the transportation elements we systematically analyzed the rationality of freight flows and of the use of various types of transportation.

Measures which have been adopted have made it possible to sharply increase the efficiency of transportation operations. Thus, this year we succeeded in shipping 1.5 times more freight on small rivers than last year and, most important, on time and in full products list. On the Vasyugan, for example, with a plan calling for 460,000 tons, 510,000 tons were shipped, and the assignments were also overfulfilled on such rivers as the Vakh and the Chuzik.

Now, the enterprises of our complex, together with the Department of the Economics of Industry of Tomsk State University, have drawn up a social and economic development plan until the year 1990.

At the Second All-Union Conference on the Problems of the Development of Transportation and Communications and on Increasing Their Role in the Country's Economy which was held in Dushanbe the Tomsk experience was approved and recommended for introduction in other regions. And, first of all, in Western Siberia. In our view, a consistent improvement of management on the level of a Single Western Siberian Transportation System will ensure a maximum satisfaction of the needs of all of the branches of the economy and will greatly increase the efficiency of social production.

2959
CSO: 1829/189

PROBLEMS IN BERDYANSK-LIBYA RO-RO OPERATIONS

Moscow VODNYY TRANSPORT in Russian 10 Jan 84 p 2

[Article by V. Zhivotkov: "Ro-Ro Vessels in the Sea of Azov"]

[Text] The arrival of the first "Ro-Ro" motorships in the basin gave rise to an ambiguous feeling among the operations workers of the Azov Maritime Steamship Company. On the one hand, it was pleasant and there was a feeling of prestige involved in having in the fleet modern specialized vessels which would help to sharply increase the rates of freight transshipment in the ports. On the other, new cares had arisen.

At first the ships with the horizontal loading method carried only motor vehicles. But this cargo was clearly insufficient to provide a stable flow. Experimental runs were conducted with roll-trailers and trailers. It turned out that this too was insufficient. It was felt in the steamship company's administration that it would not be possible to manage without the creation of a specialized "Ro-Ro" line.

From year to year economic relations between the Soviet Union and Libya have been growing stronger. With technical assistance from our country enterprises are being built in Libya. A wide stream of construction materials and industrial equipment is flowing to them from the sea.

And so the idea was born: bring the Azov "Ro-Ro" type vessels into the shipment of these cargoes and create a special line. Calculations showed that it should begin in the Berdyansk Port.

In 1980 the Berdyansk-Libya Line began to operate.

At first sight it might seem that its organization was a quite simple matter: there was sufficient freight and vessels, and it had been possible to buy the necessary number of trailers.... All that remained was to ensure the efficient and faultless operation of the line.

The organizational period of the line's establishment proved to be much longer than had been expected in the steamship administration and in the port. Quite a few difficulties had to be encountered.

At first there was the inexperience of the Berdyansk Port workers and of the crews of the ships and of the steamship company's services--the "Ro-Ros," after all, required completely different freight transfer rates--very rapid ones. The motto--Time, Time, Time--came to the forefront. The efforts, initiative, and persistence of the sailors, port workers, managerial workers, and freight shippers were directed at a sharp decrease in the time involved in all of the operations of the line's single transportation process.

The first big push produced its results. In the ports of Berdyansk and Misurata the line's "Ro-Ros" began to be processed within two days. And systematically. But there was a paradox: strange as it may seem, the first ones to cross this frontier were the ship crews unloading in the port of Misurata. Let me remind you that the obligation of processing a ship in its final port has been placed upon the crew.

The crews of the "Ro-Ro" vessels "Akademik Guber" (Captain Yu. Kucherenko) and "Akademik Artsimovich" (Captain R. Grzhibovskiy) were the first to create cargo work teams, and they succeeded in rapidly mastering second occupations and the transfer equipment, and also the new transfer and shipment technologies. They overtook the Berdyansk port workers.

It has to be recognized that the port workers also made strong efforts, carried out a large number of major organizational measures and increased the personal responsibility of operations commanders and stevedore-mechanization specialists for their work. A specialized complex was created for processing ships with horizontal loading and unloading. A team led by V. Berlov which was assigned to them was shifted to cost accounting. An area was outfitted for the gathering of trailers.

As a result of the increased speed with which the "Ro-Ros" are processed, the importance of the subdivisions which service the ship crews has grown immeasurably on the line. These are the service for providing services to the transportation fleet and the trade and public catering administration of the Azov Steamship Company.

Unfortunately, these workers did not fully understand their share of responsibility for the efficient operation of the "Ro-Ro" line. The seamen have many criticisms of them. To be honest, one is perplexed by instances of the refusal to accept laundry from the motor ships and of the careless supplying of the crews with food. Need one say that such instances lead to detaining the vessels in the port and give rise to a feeling of being offended among the seamen....

Today the Azov workers are not satisfied with the heights they have attained. They have set themselves the goal of bringing vessel processing time in the ports to a single day.

During a talk with the chief of KhEGS [Independent Operational Group of Ships] No. 3 Sergey Viktorovich Prusikov I made a notation in my notebook, "One day," and he hastened to correct me: "Change it, please: not one day, but 24 hours. That would be more right...."

A completely correct way of putting the question. The guarantee of successful work by the line must be above all an efficient and strictly scheduled delivery of the "Ro-Ros" to the ports, and not in terms of days, but in terms of hours. And the KhEGS workers are now demanding from the captains that their ships arrive not only on the designated days, but on the hour specified in the schedule.

And, yet, is a 24-hour period realistic? Yes. A judgment can be made about this from the technical and economic indicators of the line's work during the first half of last year. The basic planning indicators of its work--proceeds and profits per ton-day--were higher than the 1982 assignment by 8 and 10 percent, respectively. There was an above-plan shipment of freight of 25.6 percent. The average load per ship increased by 19.4 percent.

Recently at a meeting of the council of the Azov Steamship Company the question of the work of the line's ships was discussed. It was a candid discussion. A number of serious measures were planned to eliminate existing shortcomings and to ensure further progress. A wider range of organizations and leaders has been brought in to solve the urgent problems of the "Ro-Ro" line.

And I think there is every reason to expect that there will soon be a communication from the collective of the Berdyansk Port, the ships' crews, and the administrative workers of the Azov Steamship Company about the attainment of new heights in the work of the "Ro-Ro" line.

2959
CSO: 1829/189

OFFICE WORK BLAMED FOR KRASNOYARSK PORT OPERATIONAL PROBLEMS

Moscow VODNYY TRANSPORT in Russian 12 Jan 84 p 2

[Article by A. Krayukhin, chief of the freight and commercial operations service of the Yenisey Steamship Company, and Yu. Atlashkin, chief of the Scientific Research Department of the Leningrad Institute of Water Transportation, candidate in technical sciences: "Paper Reefs at the Piers"]

[Text] The Krasnoyarsk Port is the head enterprise of the Yenisey Steamship Company. It is from here that most of the freight is shipped along the river to the northern areas of Krasnoyarsk Kray and Zapolyar'ye. The port workers have quite a bit of good work to their credit. Nevertheless, there are many instances here of the failure to safeguard freight, and this is causing the steamship company large losses.

There are many reasons for it: from an insufficiency of well-built warehouse space, especially roofed space, to a shortage of qualified receipts and delivery workers and port workers. Not of least importance is the incorrect attitude of freight shippers to the safekeeping of their freight. This situation is such that the arrival of freight in non-standardized packaging continues to increase. Our analysis shows that the steamship company's losses on account of violations by shippers of the requirements of the State All-Union Standards and of packetization and containerization comprise 32.8 percent of the total losses.

Nevertheless the chief reason for the poor safeguarding of freight is of an objective character and consists of the fact that the methods of performing commercial operations with freight long ago came into contradiction with the technical process in transportation, especially during transfer operations. The capacity and productivity of transfer equipment is increasing, processing technology is being perfected, and progressive forms of organizing the labor of port workers are being introduced. Only everything that is connected with the documentation of the reception, transfer, and issuance of freight, with the determination of its quantity and condition, and with payments for shipments and the like, everything that is called commercial operations continues to this day to be performed just as it was decades ago.

It is comical, but it is a fact: the only "new equipment" that a receipts and delivery worker has is a ballpoint pen instead of a pencil. Commercial operations figure neither in the technological process charts for freight transfer and vessel processing, nor in the Uniform Output and Time Norms for transfer operations in the ports.

It is difficult to say now who is responsible for the fact that commercial work and commercial operations have wound up in such a backwater. But the results are at hand--a lowering of the quality of shipments. And so in Krasnoyarsk Port commercial operations have become of secondary importance on account of the hurried and unclear nature of the instructions.

Freight is accepted in non-standardized or defective packing, and damage to containers and their seals when they are accepted from the railroad are not discovered. An especially large amount of such defective work has taken place in loading vessels. Thus, during the 1982 navigation season a check of vessels in Dudinka revealed hundreds of containers which had various kinds of defects. And it is no accident that most of the losses from shortfalls and thefts are accounted for precisely by freight in containers. It is a paradox, but a fact!

The situation which had developed demanded some new solutions. This was understood both in the steamship company's freight and commercial operations service and in the port. And at this point good use was made of the recommendations of the Leningrad Institute of Water Transportation on the necessity for creating a system of continuous quality control for shipments and on the technology of commercial operations. These recommendations were put at the basis of an agreement on collaboration with the Department of Commercial Operations of the Leningrad Institute of Water Transportation.

A special card catalogue appeared in the service consisting of cards with perforated edges. This now makes it possible to accumulate information in a systematic form, and to rapidly obtain data at any moment and in any sequence about endangered freight by types of freight, forms of packing and packaging, freight possessors, and reasons and culprits, and about measures which have been taken and amounts lost. This information has made it possible to conduct an analysis of the state of affairs with the poor safeguarding of freight in the steamship company and to take measures to fight against it not in general, but in a directed way and with regard to the real capabilities of the service.

A careful analysis was conducted of the performance of commercial operations in the port. Curious things were revealed to which in the past no one had paid any attention. For example, when the reception of containers from the railroad was analyzed, it turned out that it consists of 22 operations including 15 commercial ones. And all of them have to be performed on time and with high quality, otherwise there will be delays in the process, and even defective work with large losses. And another essential detail is important--commercial operations are performed with freight not in general, but with each individual shipment which has a specific proprietor to whom the steamship company bears responsibility.

On the basis of these prerequisites, technological charts of commercial operations which were made up in strict accordance with the Rules and Technology of Freight Work were worked out and introduced in the Krasnoyarsk Port. First of all, a list of the necessary commercial operations was established and coordinated with one another and with the other transfer and organizational operations.

This list was structured into a continuous production process and drawn up in the form of a technological chart. It specified the persons responsible for the performance of each operation and the equipment to be used, and gave a detailed description of the performance of the operations. The technology also provided for a strictly defined procedure of warehousing the containers, their subsequent removal, and for the keeping of transfer documents. This made it possible to find containers much more rapidly and this means to process the ships and railroad cars more rapidly. The system of registering containers in the warehouse was simplified. It became possible for the receipts and delivery workers to give more attention to the containers themselves and not to paperwork.

Technological charts for commercial operations with containers in the port were introduced at the beginning of the last navigation season. They immediately demonstrated their advantage over the old procedures when everyone worked to the measure of his knowledge and ability and also conscientiously. For the charts make it possible to monitor the execution of operations both on the basis of the results of a transfer and directly at work places. The first results demonstrated that in 1983 the port did not have any commercial defective work in accepting containers from the railroad.

Two years ago it comprised 0.2 percent of the total amount of losses. For the present navigation season the steamship company plans to work out and introduce technological charts for the reception of grain cargoes.

It would be difficult for us to pass over one more very important issue—the training and permanent assignment of middle echelon cadres of the commercial apparatus. Receipts and delivery workers—this is one of the chief problems in the organization of the work of the ports. Specialists on this level are not trained in a single educational institution. In our view, it is time to think about setting wage rates for commercial workers, awarding them categories, and bringing some order into their pay.

And lastly. What if it suddenly happens that a container is defenseless against a plunderer? We were compelled to find a way out of this situation. And we found it. We have created and introduced a locking set-up for all types of containers. It guarantees the safekeeping of the freight and the impossibility of the removal of the lock without the use of special equipment.

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